



# **Tom Swift and His Rocket Ship**

**(The third book in the Tom Swift Jr series)**

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## CHAPTER 1

### THE MIDNIGHT DROP-IN

"SOMEBODY'S FLYING into our restricted area!" Tom Swift cried as an alarm bell broke the midnight stillness of his rocket laboratory on Fearing Island.

The blond, eighteen-year-old inventor, tall and rangy, laid two wrenches beside the magtritanium metal column on which he had been working. Turning to the muscular dark-haired youth standing beside him, he said:

"Hurry, Bud! Switch on the patrolscope!"

Tense with excitement, Bud Barclay flicked a switch beneath a large monitor screen mounted on the wall of the rocket lab. Three green points of light were moving clockwise in a large circle. Suddenly one of them made a beeline toward a small white dot.

"Our drone planes are after the pilot!" Bud exclaimed.

Each of the pilotless jets carried an amazing mechanism called the landing forcer, an invention of Tom's. This instrument could capture and steer intruding planes to Fearing's airstrip by electronically overriding their onboard servo-control circuitry.

"This might be an attack to wreck our rocket base!" Bud cried.

"Let's get moving!" Tom urged, dashing toward the door.

As the boys ran from the building Tom took a quick glance at two towering silhouettes which stood out against the starry night sky. The smaller of the two was a sleek needle-nosed metal spire, a rocket ship of Tom's own design in which Tom and Bud hoped to cross the threshold of space. The other, an astonishing colossus of metal, utterly dwarfed Tom's experimental craft. This was the mighty CosmoSoar, principally designed by Tom's father Damon Swift and intended to become the world's first truly reusable, and re-flyable, private manned spacecraft.

The wailing of the siren shrieked over the sandy island. Immense floodlights had been switched on the instant the robots had veered toward the intruding plane, and sparkling crystal-white beams from a battery of Swift Searchlights raked the skies. The boys stared anxiously upward over the center of the island, where the patrolscope—the newest version of the Swift Enterprises security radar system—had indicated the presence of an aerial intruder.

"Tom," said Bud after a few moments, "do you, er—see anything?"

"No," admitted the young inventor. "But we both saw the blip on the scope screen."

Suddenly Bud pointed skyward toward a pair of small, streamlined objects darting about in a spiralling circle. "Look, Tom! The drones have caught something. But what is it?"

In the space between the two pilotless mini-jets the boys could see a small dark shape descending slowly toward the ground. Now and then it flashed through the sweeping searchlight beams, but what the beams revealed only deepened the mystery.

"It's a man—I think," said Tom uncertainly. "But what's holding him up? There's no chute!"

Leaping into a jeep, Tom and Bud sped past the two rockets and down a bumpy unpaved roadway in the direction in which the descending figure seemed to be headed, passing groups of hustling security personnel on the way.

"Say, Tom," Bud asked, "you don't suppose our phantom fall guy was making a suicide attempt to wreck the rocket ships?"

"Something's up," Tom replied. "Certainly all licensed pilots know that this is a restricted area."

As the boys roared along the road to the airfield at the east end of the three-mile-long island, the cry of the sirens tapered away to silence.

"That means he's down," Bud declared. Up above their heads, the pair of drones continued to circle their prey, indicating where the figure had landed.

The boys braked the jeep to a stop and drew a pair of small hand-held weapons from racks beneath the dashboard. These impulse pistols, called i-guns, caused immobilization or unconsciousness by means of an otherwise harmless electrical pulse. They were based upon principles developed decades before by Tom's great-grandfather and namesake, the first Tom Swift.

Tom and Bud leapt from the jeep. But before they had had a chance to run more than a few steps, a plaintive voice floated out of the nearby foliage.

"Stop! I surrender! Don't shoot me!"

The shrubs shrugged and a man staggered out into the open. Tom and Bud halted and faced the mystery intruder, eyes wide—though not so wide as the eyes of the man himself.

The man was young, red-haired, and diminutive in build and stature. He was bent almost double by the weight of a bulky boxlike pack on his back, anchored to a thick, khaki-colored garment which was all one piece from shoulders to boot-tips. A solid-looking helmet was attached to this garment at the back of the collar; the intruder had flipped it back off his head. Two pipes extending right and left from the rear of the backpack ended in cones that pointed downwards, trailing wisps of white vapor.

"Well, what do you know!" exclaimed Tom admiringly. "A rocket belt!"

"Yeah," said the man. "I lost track of my fuel consumption and had to make for the ground."

"You wouldn't be over the ground in the first place if you hadn't broken the law," Bud pointed out suspiciously. "Or don't you know that this island is a restricted area?"

"Oh, I know," conceded the rocket man lamely. He managed a sheepish smile. "Name's Gabriel Knorff. I'm a freelance photographer. They call us—I hate to admit it—paparazzi."

"I get it," said Tom. "You were taking photos of the rockets, weren't you?"

"Rockets?" asked Knorff. "Is there more than one? You mean that little dinky thing across from the CosmoSoar is a rocket too?"

Tom had to grin. "That 'little dinky thing' is called the Star Spear, and it happens to be

my own special pride and joy!"

Tom Swift, trained by his father to become the nation's youngest rocket expert, had set up the robot defenses on this Atlantic coastal island after Swift Enterprises had entered a worldwide rocket-building race. He hoped to be the first person to pilot a privately-developed rocketcraft—either his father's or his own—into space and circle the earth in a ninety-minute orbital flight. The European-American Rocketry League had formalized the contest by offering a prize of ten million dollars and the prospect of longterm contracts with the governments of several nations. When rocket research teams in various countries signified their intention to participate, the Defense Department had cooperated by declaring the tiny thumb-shaped island—formerly a U.S. Navy weapons depot and training station—to be a restricted area.

"Didn't mean to insult you, Tom," said Knorff. "May I call you Tom? Of course, I knew right away who you were. Please call me Gabe."

Tom shook hands, awkwardly, with the photographer. Then he moved to introduce Bud. "Gabe, this is—"

"I know already," said Gabe, offering his hand, which Bud accepted warily. "Your friend Budworth Barclay."

"Don't rub it in," said Bud. "Look—Gabe—how about you tell us your story."

Knorff cleared his throat, then knelt down, unzipping the front of his flight-suit so that he could set the weight of his jetpack down on the ground. While Knorff was doing this Tom put away his pistol and contacted Fearing Island security by means of his televoc, his midget personal communicator, telling them that the situation appeared well in hand.

"It's you guys who have the interesting story here, not me," began Gabe Knorff. "All that happened was, my services were purchased a couple weeks back. I was supposed to use the rocket belt for one quick trip over the CosmoSoar, to take photos for a magazine. They figured I'd be too small to set off your alarm system. So I trained on the belt for a few hours—it's really pretty easy, you know—and then I went out in the yacht, which is anchored about three miles southwest of here, and took off from the deck. But suddenly there I am a few hundred yards in the air with my fuel alarms going off and those little jets buzzing around me!"

"We're not used to midnight drop-ins," commented Bud wryly.

"No," chuckled Gabe apologetically, "I wouldn't think so. But we didn't see the harm—you folks have talked a lot about your CosmoSoar project in the media over the last couple years. And I was offered a lot of money to get an unusual picture. From a 'different' angle, you know."

"By whom?" asked Tom. "Whose yacht is it?"

"Heliax Odysseus."

Tom's sharp intake of breath was noticed by Bud. "Tom, should I know who that is?"

"He's one of the richest men in the world," Tom responded. "His father, Demetriou Odysseus, founded a worldwide news and publishing empire. The son took over when the father retired a few years back."

"Now I remember," said Bud. "They own NCN TeleCable—I watch it all the time." Knorff nodded. "The guy's loaded all right. My fee for this gig isn't small, and these rocket belts rent at a thousand dollars an hour!"

"Which is way too much for these old antiques," Tom observed. "They're not safe. But why does Mr. Odysseus want a special photo of the rocket ship?"

"For one of his European slick-paper magazines, he said." Knorff looked down at the dirt and shuffled his feet. Then he looked up and asked plaintively, "I suppose—you're gonna confiscate my pictures?"

Tom grinned. He found Knorff a likable self-entrepreneur. "Perhaps there's no harm in letting you keep them. The government imposed a greater degree of security here than my father and I think is really necessary. We're not building secret weapons—just our own little version of the U.S. space program!"

Tom and Bud drove Gabe and his equipment back to the island's main cluster of buildings, where they would make contact with the Odysseus yacht. On the way, the photographer asked Tom where the small rocket fit into the EARL competition.

"Maybe it doesn't fit in at all," replied the young inventor wistfully.

Several years previously, before Tom had begun taking active part in the doings of Swift Enterprises, Tom's father had formally tossed the Swift hat into the ring of the EARL contest. Damon Swift, once a consulting engineer on the space shuttle program, had in mind some radically new approaches to the design of manned multi-stage rockets. The result was the mammoth rocket ship now poised for its first flight on the Fearling Island launchpad—the CosmoSoar.

Naturally Tom wished every success to his father's project, which had tied up a great deal of the assets of the inventing firm started by the original Tom Swift and his son. But it was equally natural for the 21st Century's own young inventor to have some new ideas that were his alone. Thus began a friendly competition between father and son.

"I suppose Dad is just being indulgent in letting me use Enterprises resources on the Star Spear," Tom observed. "He thinks his own approach to private commercial spaceflight is the more practical one, and for all I know he may be right."

"How is your approach different, Tom?" asked Gabe. "Of course, I can see it's smaller. But size doesn't matter—look at me, I'm 5 foot 5!"

As Tom laughed at this remark, Bud commented, "Tom's into the old Buck Rogers thing—your own compact rocket ship that takes you where you want to go without coming apart. It has just one stage."

"Unlike the Cosmo, which has five of 'em!" Tom added.

"Man alive!" exclaimed Gabe Knorff. "A five-stage rocket, taller than the Washington Monument!"

"But will it get off the ground?" asked Bud jokingly. "My money's on genius boy here and the Star Spear."

An hour later, his background as an international press photographer having been verified by Phil Radnor, chief of security on Fearing Island, the boys saw Knorff off at the island pier. An Enterprises employee was to pilot him to the Odysseus yacht, the

Heraklona, in a speedboat.

"Thanks, guys!" the photographer called out, waving his camera. "And thanks for the invite to the launch!"

"Just remember to tell Mr. Odysseus he's welcome to come along!" Tom called in reply. He winked at Bud, who grinned back at his pal. They both knew Knorff's mega-wealthy patron would be unlikely to respond to anything as informal as a verbal invitation.

As the speedboat roared out of sight, Tom said, "He's kind of a fun guy."

"I guess so," Bud admitted. "He didn't do any harm—except for the sleep we lost."

"Bud, why don't you go make up for lost time," urged Tom.

"Not you?"

"Too wide-awake. I'll finish what I was working on in the lab before hitting the sack. In fact, I'll just use the cot there in the lab, I think."

Arriving at the rocket lab, Tom noted that the magtritanium column on which he had been working was still undisturbed in its clamps on the metal lab table. He opened a nearby equipment locker and withdrew from it a basketball-sized spherical object, made of crystal which gleamed like diamond. This was his new invention, the fuel solarizer, which would allow his small rocket to perform like the "big boys"—if he could make it work!

Tom carried the instrument to his workbench and connected it to the test column, which contained a microminiaturized version of the motors that would propel the Star Spear into space.

The stillness of the night was broken for a time as Tom switched on one of the pumps that would be used by the solarizer, testing the rate of flow. As it ran, he made some careful adjustments until he had achieved a satisfactory result, then switched it off.

As the laboratory became deathly still again, Tom was aware of a slight noise in the adjacent lab. Thinking it might be one of the chemists back to shut off an experiment, Tom, eager for company, hurried into the room.

The bright light from his laboratory revealed the intruder's face—a face Tom had never seen before! The man scowled at Tom and suddenly darted toward the lab door!

"Stop!" Tom shouted, having decided that Halt! was a shade too formal. The intruder raced into the corridor with Tom after him. But before Tom lunged through the doorway, he pressed a button to sound the alarm. As it clanged, he looked up and down the corridor. There was no sign of Tom's quarry.

"He must have ducked into the chemical supplies room to hide," Tom decided. "There's no other possible place!"

Tom spun into the dark supply room opposite his lab. He snapped on a light, cautious and ready for a fight. But no one was in the room but himself.

"He slipped out!" Tom groaned.

Realizing that his solarizer invention now stood exposed as he had left it, Tom stepped into the corridor. Treading as softly as he could, he reentered his rocket laboratory.

The stranger was bending over the solarizer, trying to unscrew one of the feed pipes with a wrench.

Tom crept toward him noiselessly, tensing every muscle for a lunge at the intruder. Suddenly the man straightened up and stared at the magtritanium housing. In its gleaming surface he had seen the young inventor's reflection!

Tom flung himself forward. At the same instant his adversary swung around and hurled the wrench. Its handle hit Tom above his left ear.

He pitched to the floor, unconscious!

## CHAPTER 2

### FOLLOWING A CLUE

"TOM MUST BE in trouble!" Bud muttered to himself as he jumped from bed and pulled on trousers and moccasins. "That alarm bell's going off in the rocket lab!" As Bud dashed outside, he could see guards and sleepy-eyed engineers trotting to their various posts for the second time in one night. In the distance he could hear the whine of patrolling powerboats.

Bud ran straight to Tom's private workshop where he found his friend lying limp on the floor, and for a horrifying second Bud thought that the young inventor was not breathing. He bent down and grasped Tom's wrist lightly in his fingers. Feeling a strong, steady pulse, he whistled in relief.

Bud broke a vial of aromatic spirits from the first-aid cabinet in the laboratory and waved it under Tom's nose. Within a few seconds the young inventor's eyelids began to flutter. Bud gently lifted his pal onto a couch. Then Tom moaned, opened his eyes, and sat up.

"The fuel solarizer!" were his first words.

To the boys' relief, the instrument stood where Tom had left it and a quick glance reassured them that the intruder had not made away with any part of it.

Contacting Phil Radnor by televoc Tom explained what had happened, ending with: "He was starting to disconnect the machine, but I guess the alarm bell frightened the guy off."

At that instant the broader picture of what had taken place struck Bud. "Listen, Tom, it can't be just a coincidence that that photographer dropped down on us at the same time a thief dropped in!"

Tom nodded, grimly. "You're right," he said. "The intruder was able to sneak onto the island because the whole security system was dealing with Knorff. But that doesn't mean the two are in cahoots—Knorff might be just a patsy."

"Yeah," Bud agreed. "But either way, it points in the same direction."

"Right," said Tom. "Heliix Odysseus!"

The boys checked with the island control tower for a report on the patrolscope record-tapes.

"No plane has taken off since the alarm sounded, Mr. Swift," said the employee on duty.

"And no activity out on the water, except for the big yacht, which is miles away, and the speedboat leaving and returning." Tom immediately made contact with the speedboat pilot, who reported that Knorff had been ferried to the yacht without incident, and that no one could possibly have stowed away on the boat when it returned. "Besides, Tom," he said, "I didn't get back until ten minutes ago, and you'd already been attacked by that time."

As the boys stood uncertainly in the night air outside the laboratory building, Hank Sterling pulled up in a jeep. He was the talented head of the Swift Enterprises engineering division, and had been stationed on Fearing Island for the last month to oversee the final work on the CosmoSoar.

"I heard all about what happened from Phil," said Sterling, "and I've discovered something!"

"What?" asked Tom anxiously.

In answer Sterling directed Tom's attention to the back seat of the jeep.

"A scuba outfit!" Bud cried. "Tanks and all!"

Hank nodded. "It was just dumb luck—I saw it lying in a heap on the northwest beach."

"This is how the guy got onto the island," Tom said. "But how did he get off?"

"Or has he gotten off?" asked Hank.

Hank drove Tom and Bud to the island infirmary, where the attending physician, Dr. Carman, examined the bruise on Tom's head. "Tom, let me put some antiseptic on that baseball you're growing."

After a bandage had been taped over Tom's scalp the boys left the infirmary, wondering where to look next for the would-be thief.

Bud put a hand on Tom's shoulder and squeezed it. "Tom, give it a rest for a few hours. Phil Radnor's guys are combing the island. You go get some sleep, pal!"

Tom gave a rueful sigh. "Okay."

Tom went to his private quarters and spent a few hours tossing and turning in shallow sleep. As dawn paled the Atlantic sky, he rose and showered, and then returned to the lab complex in hopes that continuing his work on the solarizer would take his mind off this new mystery. It seemed he had been working only minutes—though in fact it had been three hours—when he looked up from his machinery, distracted by a delicious aroma floating in through the half-opened lab window.

"C'mon, Tom!" boomed a foghorn voice with a western twang. "Open up this here door and have some flapjacks, Albuquerque style!"



"Okay, Chow," Tom replied, admitting the larger-than-life form of Chow Winkler, the Swifts' personal chef and a close friend.

Chow bore a platter of flapjacks, a pitcher of syrup, a tub of melted butter, a glass of juice, a pile of sausage links, and a steaming-hot cup of strong coffee.

"Whoa!" said Tom in mock alarm. "A real artery-choker!"

"But brand my skillet, it'll give you a taste o' heaven goin' down!" Chow remarked as he set down his tray.

As Tom ate, he motioned for Chow to join him. "Be glad to, boss," said the native Texan. "I'as gonna ask you, how're things going on that skyrocket o' yours?"

"The Star Spear? All right, I guess," Tom replied without enthusiasm. "Dad's ship launches for a pilotless test in a few days, you know. Then it won't be long before the manned launch."

"Aw, that big cosmo-saurus hasn't got a thing on your space bronco, Tom," Chow observed reassuringly. "I prefer those compact jobs any day o' the week!"

Tom smiled. "Thanks, pard. But now we've got another worry—a phantom thief."

"I heard tell o' that. But you'll get 'im!"

After the roly-poly cook had left with his tray, Tom spent some time in sober thought about his mysterious adversary.

What clues do we have? Tom wondered. He was wearing gloves—so no fingerprints. But what about—?

Though the young inventor was eager to get back to his work on the rocket, he felt that the menace to the project took first priority for the moment. An idea flashed into his mind, and Tom went straight to Phil Radnor's security office.

"Phil's out with the search team right now, Tom," said the woman behind the desk, whose name was Nancy Mott.

"I think you can help me, Nancy," Tom responded. "I'd like to borrow those scuba tanks Hank Sterling found on the beach."

"I'll get them from the locker," she said.

As Tom was leaving the office, Bud hailed him. "What's up now, Skipper?" he asked.

"Just a little detective work. Come on."

They went to one of the temporary labs Tom had set up in "laboratory row." Tom carefully placed the pair of tanks in a holding cradle of ultra-thin wire mesh. He then slid the cradle beneath a camera-like mechanism.

"Looking for prints?" Bud asked.

"Yes," Tom answered, "but not of the finger variety. It's sometimes possible to trace a buyer of paint. Manufacturers have been asked to include some secret chemical 'markers' in small quantities in their paint so that it can be identified by police if necessary. The rule has come and gone since it began after World War II, but it's now encouraged again as part of the defense against terrorism."

"I get it," said Bud. "You're looking for chemical 'fingerprints'."

"Right. A while back the FBI gave Harlan access to the encrypted internet website that continuously updates the chemical marker-codes," Tom continued, referring to Harlan

Ames, Swift Enterprises' overall chief of security. "I'll plug the current codes into this ultraviolet fluorophotometer and we'll see what comes up."

The machine operated silently, scanning the surface of the tanks from every angle as the holding cradle rotated beneath its lenses. Tom and Bud watched the readout monitor.

"Well, it's found something," said Tom quietly. "But it may not be enough for a reliable analysis."

Nevertheless, in a moment the screen displayed a name.

"Worthy Paint Company!" Bud exclaimed. The boys started phoning, first to Worthy, then to a Philadelphia watercraft and seaplane builder that had purchased that particular batch of commercial paint some years before. After a lengthy discussion, Tom and Bud were able to determine that the paint had been used in the construction of a type of craft that seemed a "likely suspect."

"We call them our WaveSkimmer-Sevens," said the manager of the company. "You can see pictures of them on our website, if that would help. They're basically ultra-small slim-hulled boats for racing enthusiasts, equipped with jet engines."

"Could they be used in ocean waters?" asked Tom.

"Very dangerous," the man replied, "and we don't encourage it. Still, I know people who've done it. One thing about our WaveSkimmer series—they can easily be modified to sit especially low in the water. Maybe that's important, huh?"

Tom gave Bud a significant glance. "Could be. How widely are these distributed for sale?"

"We sell direct," the manager responded, "and if you're looking for something a little odd, I recall one case from last year. See, the enthusiast world is still small enough that people know people—everybody knows your name, so to speak. But in this case, I dealt with some guy I never heard of, who bought three boats and had them delivered up some place in New England. I'll look it up right now."

When Tom hung up the telephone, the young inventor's eyes glistened with excitement. Reporting the conversation to Bud, he said: "Besides the other things that were unusual about the sale, the buyer paid cash. That was a lot of money for one man to be carrying around."

"Yeah," commented Bud, "just like it cost a bundle to rent a rocket belt!"

"The man gave his name as Arthur Gray, and delivery was made to the public pier at Hankton, Maine."

"What about an address on Gray?"

"Turns out he didn't give an address, and because he paid cash on the barrelhead he wasn't required to. There was a phone number, but it was to a local hunting lodge where Gray claimed to be staying."

Bud grinned. "Well, when do we start for Hankton, Tom?"

"Why not right now?" Tom replied. "I need to clear my poor bruised head a little anyway. We'll borrow the amphibian Dad's technician from Richmond flew in on. I don't want to attract attention by using an Enterprises plane."

Within the hour Tom and Bud were winging out over the eastern tip of Fearing Island,

Bud at the controls. They circled the island once, viewing the twin rocket ships on their launchpads, and then headed northeast.

The amphibious plane was high over the Atlantic, opposite the mouth of Chesapeake Bay, when the radio buzzed with an incoming message from Phil Radnor. "Tom, it looks like we know how the intruder got off the island. As you know, we've been searching since the incident last night, and we just wrapped it up a while ago. When one of our guys didn't report in, we instituted a search for him, and found him bound and gagged near warehouse three, pretty beat up. He's in the infirmary."

"Let me guess," Tom groaned. "He was one of the guys searching the perimeter of the island in a boat—right?"

"You got it, Tom. Which means his boat was equipped with one of those patrolscope-nullifiers. We don't know which way he went. To the mainland, I'd guess."

"Or to the Heraklona!" Tom added. "Thanks for the update, Phil."

Less than an hour later Bud banked and lost altitude at Tom's direction. Flying close to the sun-flecked waves, he hugged the shore.

"There'll be a red-striped lighthouse on the last jut of land before we hit the bay we want," Tom told Bud.

"Hey, I see it!" the pilot cried. "Looks like a big barber's pole!"

Smoothly as a sea gull, the plane flew past the lighthouse and leveled toward the anchorage in one of the coves. A village of about ten houses hove into sight. At the end of a spit of land was a small dock. Bud set the amphibian down about half a mile out and taxied in. As Tom made her fast to the dock, the boys saw a lobsterman, who was busy dumping the morning's catch into a square scow.

"Muttty fine plane y'got there," the man observed without turning around.

"We like it," said Tom noncommittally, and asked if this was Hankton.

"S'whut we call it."

"We're looking for a man named Gray," Tom said.

"Are ye now?" responded the man. "I ast ya a'cause my sister married a man o' that name."

"Oh?"

"O'course he's been dead these twenty years."

Tom smiled. "I'm looking for an Arthur Gray. He was living—or at least staying—around these parts within the last year or so."

"Now yuh're cookin' with gas," said the lobsterman. "Arthur Gray! Well then. Nev' heard of 'im!"

Tom shot Bud a helpless glance.

"He might have been a real outsider," Bud commented. "Just a visitor."

"Oh, thet one!" the lobsterman said with something like disgust. "He ain't a local variety. But he ain't exactly jest a summer person, either. He owns a pretty fair-sized house about quarter of a mile to the right up Coveshead Road. Looks like a hotel. Can't miss it with yer eyes close't. But ain't no one living there now s'far as I know. Not a soul."

Tom was tempted to ask about the jet mini-boats, but fearing he would arouse the

suspicious of the fisherman he simply thanked the man, and the two boys walked along the dock to the street.

"Yow, it does look like a hotel!" Bud exclaimed, as a huge three-story weather-beaten frame house loomed on the right side of the wooded road. "It's closed up—just as the fisherman said."

"At least that's the way it looks," Tom snorted. "Not like he'd put out a sign, LOOK INSIDE FOR PHANTOM ROCKET THIEF!"

The two boys walked around the place but saw nothing unusual. "Let's go down this path to the water," Tom suggested.

They walked down the pine-needled slope which led to another cove. The path ended on a pier that extended about a hundred feet into the inlet. A sheet-metal hut stood on the dock about halfway out.

"Let's see what's in that shack," Bud proposed. "Bet you could stack three of those WaveSkimmers in there!"

The boys had just started forward when sudden footsteps sounded behind them and a gruff voice commanded:

"Don't ye move!"

## CHAPTER 3

### IONOSPHERE MELTDOWN

STARTLED BY the ominous command to halt, Tom and Bud stood motionless. The strange voice growled: "Turn around! Quick!"

The boys obeyed and pivoted to face an elderly man who carried a shotgun cradled in his arm like a baby.

"Now then, what d'you mean by goin' down that path?" he demanded, circling to get behind them.

"Listen a minute," Tom protested. "We're not—"

"Nevuh said I cared what yuh're not," the man barked. "Jest want t'know what ya are! Mr. Gray a-hire't me to keep strangers off his place, and strangers is jest what yew look t' these old eyes!"

Tom spoke quickly. "Haven't you heard the bad news about Arthur Gray?" he asked,

looking at the watchman over his shoulder.

"What's that ye say?" the old man asked as if he hadn't heard the question. Then, as its import sunk in, he added: "Gol-sarn it, yuh're jest talking foolish to get something out of me."

Tom said no more and started walking up the path. Bud, sensing his friend's strategy, winked at him and trudged along in silence beside him. They had moved only a hundred feet when the caretaker exclaimed: "Hold on there!" The file halted. The old man stepped in front of the boys. "What's the matter with Mr. Gray?" he asked, staring at Tom.

"He's in bad shape, sir," Tom replied. "That is, if we're talking about the same Arthur Gray. What's your boss look like?"

"Middlin' height, dark, has a gold-capped tooth in front o' his mouth. He has the biggest hands I saw on a man his size, considerin' I never see him usin' them to do any work."

Tom and Bud tried not to show their elation at the identification—the description matched the man Tom had seen perfectly! "That's him," Tom said.

"You won't be seeing him for a long time," Bud spoke up, hoping this bit of news might elicit even more information from the man. "We thought by coming here we might find out about his family or friends—" He left the sentence unfinished.

The old man set his shotgun on the ground. Losing his look and tone of authority, he asked: "What's wrong with him? And who ayre ye, anyway?"

"We're employees of a company that's working on a big project," Tom replied. "It's confidential stuff having to do with space flight!"

The man's eyes widened. "You mean rockets and such?"

"Yes," Tom confirmed. He decided to level with the watchman. "Arthur Gray managed to sneak into our facility, which is protected by the U.S. government. I caught him trying to damage one of our pieces of equipment."

The man nodded and indicated Tom's head. "Gave you that goose-egg, did he?"

The young inventor grinned. "He sure did! Then he ran off, and we don't know where he is, or who he's working for."

"For all we know, he might be a spy!" Bud exclaimed. "He might be working for some foreign government."

"I see. Well, ye look honest enough, an' old Asa Pike ain't one to be taken in. Which is why, afore I trust you, I expect t' see some papers. Not likely I'd believe a story like that on the say-so o' two youngsters!"

Tom and Bud produced their wallets, and Mr. Pike examined their driver's licenses and other identifying materials, including their Swift Enterprises employee ID's.

"Hmm," he said finally. "Thomas Swift and Budworth Barclay." He handed them back their wallets. "Now both o' those names are mighty familiar here in Maine, and up and down the coast. But you sure-t'-hey ain't thet same Tom Swift who built all them blimps and contraptions back when my granddaddy was a lad."

"No, sir," said Tom. "That was my great-grandfather."

Mr. Pike nodded judiciously. "Seems to me I've heard of you." He thought for a

moment. "Tell ye what. There's no place for strangers to eat around here, so come up to my house for some victuals. I might have sutthin' to tell ye after all."

The boys thanked him and followed readily. In a few minutes they reached a shack in a pine grove. Asa Pike led them into his kitchen. A savory lobster stew was simmering on a kerosene stove. Ten minutes later the boys were feasting on the best sea food they had ever tasted.

Tom led the conversation to the topic of Arthur Gray. "We were told Mr. Gray liked to race those little jet-boats. Did you ever see him do it?"

"Nope, nope," said Pike. "Never saw him race. But he had three o' those little boats, that's for sure. Used to take 'em out in th' cove early morning with a couple other men. Made a dang racket—folks complained. Then a couple months back he shipped all three away in a big truck, and left hisself the next day."

"Left to where?" asked Bud.

"Can't rightly say," Pike replied. "Mr. Gray jest said he had business 'away' and would be gone for months. Arranged with the bank to have me paid reg'lar. So you say Mr. Gray and those other fellers might be spies?"

"Might be, Mr. Pike." Tom finished a second helping of the tasty meal and came to a decision. "Look, you're a loyal American," he said with a smile. "Bud and I feel sure that Gray and the others are up to something underhanded, possibly to do with this big project Uncle Sam is interested in, the one I mentioned. How would you like to help find out?"

Asa Pike's eyes bulged. "Me!" he exclaimed. "You a-deputizin' me, y'mean?"

"Oh, you don't have to unless you want to," Tom told him quickly. "And we don't want you to do anything risky—just let us know if Gray, or anyone, comes back around this way."

"Ketch me sayin' no!" the caretaker said. "Anything to help Uncle Sam. Jest wait until I tell—"

"You must keep this under your hat," Tom cautioned him. "I'll write down a special phone number you can use to contact my security chief. And now I have one more question. Did Mr. Gray ever speak of a man named Heliax Odysseus, or a big yacht, the Heraklona? Or some wealthy friend he knew?"

Asa Pike thought a moment. "Not so's I remember. Those two other men—he called the young one somethin' like 'Poll-oh,' and the other was named Goff."

"Could it have been Knorff?" Bud asked.

"Don't think so," replied Pike. "Nope."

"Better not say a word to anyone about our visit," Tom warned Asa Pike, adding, "We'll have to go now." The boys thanked the now-friendly caretaker for his help, and Tom gave him the Fearing Island telephone number.

"I won't fail ye," Asa Pike promised.

The two boys headed for their plane at the fishermen's dock. The place was deserted; even the lobsterman had gone.

"We picked a good time to drop in," Bud remarked, as they cast off and prepared to taxi

out to the open bay, where Tom, in the pilot's seat, gunned the engines. The amphibian lunged forward and roared along the surface. A moment later it was air-borne, and by three o'clock Tom and Bud were back at Fearing Island, telling their story to Hank Sterling and Phil Radnor.

"Anything new here?" Tom asked when he had finished.

"One thing," said Hank. "A message came in about your family. Your Dad and sister are flying in on the Sky Queen in—well, just about now." The engineer smiled a mischievous smile. "Bringing that pretty girl along. What's her name?—oh, Bashalli. To keep Sandy company, I suppose. Those girls sure have an interest in science!"

Tom and Bud grinned, knowing that they were being needled. The four young people were frequently seen around Shopton as a foursome, despite the heavy schedule of work Tom and Bud carried on.

Tom's Flying Lab, the Sky Queen, had been scheduled to arrive on Fearing Island in order to carry Tom up to the edge of space so that he might test his fuel solarizer under conditions similar to space flight. Though Tom had known that his father would be riding along on the trip from Swift Enterprises in Shopton, the presence of the two girls was a nice surprise.

While Bud went off to shower and shave, Tom returned to his private quarters. This might be a good time to write up my daily record for Dad, he decided. Tom, like all good scientists, kept a day-to-day record of his new ideas, the progress of his inventions, and his data and calculations. He had done so since the age of twelve.

These records already filled several volumes. One recent part told the story of the building of his flying laboratory, and his adventures while prospecting for radioactive ore in the Andes. The record also logged his invention of a midget atomic sub, the jetmarine, and the exciting times he and Bud had had in their encounter with modern-day pirates.

Tom's records were entered electronically in an encrypted file on the Swift dataserver in Shopton, with duplicates maintained automatically at several other locations. No paper was ever involved, save for the occasional sketch that Tom scanned into the computer. Nor was there a password for access: a device on Tom's keyboard read his thumbprint and several other indicators before allowing him to log on to his personal files. Since coming to Fearing Island after the end of his jetmarine project, Tom had seen relatively little of his father. But he had kept especially detailed records about the status of the Star Spear and the development of his fuel solarizer, which Mr. Swift read whenever he accessed the file.

"I feel confident now," Tom wrote, "that we will be ready to launch the passenger rocket ship in ten days or less. The Star Spear itself is complete as it stands. Only the final testing of the solarizer in the ionosphere remains to be done. If this test proves successful, I may have a chance to get my rocket off ahead of Dad's CosmoSoar. And I have to admit, that's one of my goals—no offense, Dad!"

Tom had just finished when a deep, growing roar from overhead told him that the Sky Queen had arrived on the island and was touching down on its special landing pad.

Standing in his doorway, Tom watched the sleek, mammoth three-decker sink down like an elevator atop its jet lifters, slowing to the gentlest of stops. The side hatchway opened and a railed rampway was extended down to the tarmac. In moments Damon Swift, Tom's father, had appeared, followed by Tom's vivacious blond sister Sandra and her good friend—and Tom's—Bashalli Prandit, a native of Pakistan.

Tom strode toward the landing pad and met the new arrivals halfway. At almost the same moment, Bud sped up in a van, ready to carry everyone and their belongings to their quarters.

"Your mother sends her love," said Mr. Swift to Tom as they shook hands. "She decided she ought to stay with Aunt Hazel for a few more days."

"Oh, Tom, this is so exciting!" cried Sandy. "Pictures are one thing, but seeing the rocket ship close up—it's like an ocean liner standing on end!"

"It is quite a sight," said Tom carefully.

Bud added: "Each rocket is a beaut in its own way."

"Each rocket?" asked Bashalli, her eyes twinkling. "Is there more than one?"

"Tom's craft is the—er—less extravagant one," said Mr. Swift. "But it's close to flight-ready, I understand."

"We have a saying in my native Pakistan," remarked Bashalli. "What matters is the skill of the poet, not the size of his brush."

"We have a similar saying, Bash," commented Bud. "But your way of putting it is—"

"—much nicer," finished Sandy. "Anyway, Tom, Daddy promised to show us the inside of the ship. The CosmoSoar, I mean."

"But I do hope you'll also show us your rocket, Tom," Bashalli added smoothly.

Tom's response was somewhat offhand in tone. "Oh, sure, if you like. But it'll have to be tomorrow. I have a dinner date in the ionosphere!"

After dropping off Mr. Swift and the girls, Tom and Bud drove out to the Sky Queen, where Tom oversaw the installation of his fuel solarizer in a special airtight compartment on the third deck, a compartment with a transparent plexi-quartz porthole as its ceiling.

Boarding the Flying Lab, Tom personally hooked in the pump that was designed to carry liquid oxygen through the solarizer. Next, he attached a flowmeter to the pump to register the speed of the liquid. In rocket flight, oxygen would have to flow through the device at a rate of several thousand gallons per minute to satisfy the hungry motors. Should anything interfere with this flow, the rocket would cease to operate and founder in space.

He flicked on the power and listened to the even whirring of the pump. "It's perfect!" he murmured elatedly, as the liquified gases surged through the unit. Satisfied, Tom turned off the power, and contacted Bud, on the command deck, via intercom.

"Make for the sky, flyboy!" he said. The jet lifters rumbled in response, and in seconds the huge stratoship was javelining toward the ionosphere, the region of the atmosphere lying above the stratosphere—and far above the clouds.

As planned, the Queen came to a hovering halt at a height of 350,000 feet, the edge of



space. The sky was a star-flecked indigo despite the blinding-bright disk of the sun, which was still well above the curving horizon.

"Hold her steady, Bud," intercommed Tom.

"Steady as she goes, Skipper!" was Bud's reply.

The purpose of the test was to determine if Tom's solarizer could successfully use the unshielded solar rays to convert oxygen to its tri-atomic form, ozone, at a rate which would keep up with the demands of the fuel pump. The energized ozone would be combined with the diethylhydrazine compound developed by Swift chemists, producing the continuous "explosion" that was the basis of rocket thrust. Both of the new ships used the same basic fuel, but Tom believed that his solarizer would allow for greater energy efficiencies during the latter portion of the ascent into space, thus decreasing the size of the fuel tanks.

Tom activated the solarizer and slowly brought it up to speed, the rays of the sun shining down full-force on the transparent globe that was the heart of the machine.

The rate and pressure dials slowly crept upward, and Tom's pulse pounded—his new invention was working!

"This is great!" he said aloud to himself.

Suddenly an electronic buzzer went off—and then another! Tom checked the equipment and gasped in dismay. The solarizer's intensifier globe was sagging under its own weight.

Good night! Tom thought. It's melting!

The next moment the test compartment was wracked by a flash of brilliant blue-white light and the roar of a powerful explosion!

## CHAPTER 4

### UNSUSPECTED SUSPECTS

AT THE CONTROLS of the Flying Lab, one deck down from the location of the solarizer test compartment, Bud started in his pilot's seat at the muffled retort of the explosion.

He instantly snatched up the intercom microphone from its cradle on the padded arm of the contour seat. "Tom!" Bud cried. "What was that? Are you all right?"

Receiving no answer but a ragged burst of static, Bud catapulted from his seat—and paused. Turning back to the control panel, he reset the autopilot with trembling hands, instructing the Sky Queen to descend toward the breathable region of the atmosphere with all possible speed. Then he pivoted and scrambled toward the metal stairs that linked the middle deck with deck three above.

If that blast blew out the porthole, Tom could be gasping for breath—and freezing! shouted Bud's fearful thoughts.

But even as the youthful pilot set foot on the stairs, a croaking voice drifted down from above him:

"I—I'm okay, Bud."

Tom was leaning weakly against the stairway rails. His face was pale, and traces of blood were flowing from several small scratches on his hands and arms. Bud clattered up the stairway without a word and helped his friend to the large, comfortable lounge area at the fore of the top deck, easing him down upon a couch. Then Bud treated Tom's cuts with antiseptic and bandages from a first-aid kit.

"Doesn't look too serious," he commented. "Anything inside those cuts?"

Tom shook his head. "No, I don't think so. I guess I raised my hands and arms instinctively, and they took a few flying pieces of sealant material from the pump joints, but that's all. I was thrown against the wall—I feel like I've been tackled by a gorilla!"

Bud forced a grin. "So what happened in there?"

"What happened? Just an experiment that failed." Tom's voice was thick with discouragement. "The flow-rate was a little more than half what was required when something happened to the lens-array globe. It started melting, like wax in a flame."

"Were you burned when it blew?"

"It didn't blow. There was a big electrical discharge—which didn't reach me due to the safety dampers around the solarizer. That boom you heard was basically a manmade thunderclap!"

Tom glanced out the floor-to-ceiling viewpane of the lounge and noticed wisps of cloud fleeing past, vertically. "Is the ship dropping?"

"Right, Skipper," Bud Barclay replied. "I figured our ionosphere date was over!"

Leaving Tom to rest on the couch—in reality, the young inventor returned immediately to the test compartment to make some observations—Bud piloted the Sky Queen to a landing on Fearing Island.

Chow prepared a tasty supper for the two boys and the visitors from Shopton, and, as usual, was invited to join the others and enjoy the fruits of his labors.

"Well, brand my rocket roost!" exclaimed the chunky ex-chuck-wagon cook when Tom and Bud had finished telling the others about the adventures of the day—not only the test of the solarizer, but the trip to Maine. "Here I am, slavin' over my griddle an' pots, while you two boys have gone up to Maine an' way up to that there iron-a-spear!"

"Do you think there might be some basic design flaw in your solarizer?" Damon Swift asked his son.

"Maybe so, Dad," admitted Tom very reluctantly. "It wasn't a problem with heat inside

the globe, but with thermal buildup in the crystal substance of the globe itself, caused by an unexpected piezoelectric effect. I'll have to completely rethink the fuel solarizer... and..."

Tom's voice trailed off. He took a bite of his supper.

"Now Tom," said Mr. Swift gently, "the competition that counts is the one we're both trying to win for Swift Enterprises. We're not competing against each other."

Tom nodded with a polite smile, but said nothing. After a few moments he broke the awkward silence. "Anyway, Sis, Bashalli—how'd you like the CosmoSoar?"

"Well, it was—" she paused, trying not to hurt Tom's feelings. But then her sentiments could not be contained. "It was just amazing! We went up to the top on the gantry elevator, and all the way Daddy was explaining how everything worked."

"Okay, San, what did you learn?" Bud challenged.

"Ye-ahh, I'd like t'hear this myself," added Chow.

Sandy cleared her throat and composed her thoughts. "The CosmoSoar is the world's first five-stage passenger-carrying rocket, and the biggest rocket ship of any kind ever built. Five-stages—but they're not on top of one another in the usual way. Stage one is around stage two; and then you go up one layer, and stage three is around stage four."

"Shor, I get that," Chow interrupted. "Jest like a bundt cake goes around the hole in the middle!"

"That's right, Chow," Sandy confirmed, suppressing a giggle. "The first stage lifts the ship up just a few miles, and then it sort of opens up like a book and lets loose the second stage, which is inside it."

"Let us make this a team effort," urged Bashalli. "The first stage is tossed aside, but it doesn't fall down—no, it stays wide open, looking like the wings of a bird. Then this thing pops out—what was it called, Father Swift?"

"A paraglider," said Mr. Swift. "It's actually part of the 'skin' of the hull itself, opening out by a simple mechanical arrangement. It contains its own midget guidance system and remote-control receiver; even a pair of para-thrusters, no bigger than your forearm, to help direct it."

"So," Sandy continued, "the outer stage peels off and glides back to earth, while the inner stage, number two, takes over. And that one also has its own glider that it uses when it drops away."

Bud looked puzzled. "Mr. Swift, that ship is so huge—I figured the stages would be too heavy to be flown back to the ground!"

The elder Swift nodded. "Indeed they would be, Bud. But there are two things to consider. First, remember that most of a rocket's weight is the weight of its fuel. By the time the stage is jettisoned, the fuel will have been used up. But more importantly, the CosmoSoar, like Tom's Star Spear, consists of a series of Tomasite shells reinforced with a rigid mesh of magtritanium—which is an extraordinarily lightweight combination."

Bashalli now took up the narrative. "So you see, the first two stages get the ship going, and the next two push it into orbit. And then all you have left is the little top layer of the wedding cake, where the spacemen are."

"But it's still awfully big," added Sandy. "Like something you'd see on a sci-fi show."

"So how many of them astro-nauts does it sleep, Mr. Swift?" Chow inquired.

"This first model will carry just two," he answered, indicating Tom and Bud. "There'll be a good deal of open space. Eventually the line will carry a crew of ten."

"Will the top part land back here on the island?" asked Chow.

"No, although an aeroform-type vehicle is on the drawing board. This model will paraglide into the ocean like the first four stages. You know," continued Mr. Swift, "the whole idea is to develop a rocket technology that allows for complete re-use of all its parts, not just the command module. Someday we'll pluck the spent booster stages from the water, refuel them, and send them up again right away!"

"Oh, and another thing!" said Sandy. "The flaming parts at the bottom of each stage—the real rocket thrusters, I mean—aren't separated into little cone-shaped things like they usually are. Instead there's a sort of circular slot that runs all the way around the bottom, just inside the rim."

"I believe it was likened to a circular gas burner on a stove," added Bashalli. "Only it is upside-down, you see."

"I see," Tom said. "Very interesting. You've got a couple apt students here, Dad."

"But tomorrow morning, you must show us all the outs and ins of your Spear, Tom," urged Bashalli, sensing that Tom's feelings were slightly bruised by all the enthusiasm directed toward the CosmoSoar.

Tom gave a half-wince. "I'm afraid my Spear may be out of business for a while, Bash." He turned his gaze toward his father. "Dad, I'm guessing the whole engine assembly will have to be pulled and redesigned. I'd prefer to work on it back at Enterprises, so I think I'll hitch a ride on the Sky Queen when it flies back to Shopton tomorrow."

"You may find that the change in scenery clears your head, son," observed Mr. Swift.

"As I'll be remaining here anyway to oversee the preparation of the CosmoSoar for its pilotless test flight, I can keep an eye on the retrofitting of your ship as well."

"Thanks a lot, Dad," said the young inventor quietly.

The next morning, the Sky Queen was zooming its way north toward Shopton, the damaged and disgraced fuel solarizer still latched down in its test compartment. Besides a small crew of flight technicians, the giant skyship carried Tom, Bud, the two girls, and Hank Sterling, who was anxious to be reunited with his family. Chow Winkler would remain on Fearing Island for the present, to serve as cook for Mr. Swift.

The several passengers had gathered in the lounge for refreshment and conversation as the dome of the deep blue sky looked in on them through the viewpane.

"Tom, have you heard anything from this watchman in Maine, Mr. Pike?" asked Sandy.

"No," Tom answered. "But it's only been a day."

"Sandra and I have been talking," said Bashalli, "and we agree—for we are a team, you know—that this mystery must be approached in a logical way."

Bud gave a broad grin. "Logic, huh. More Martian invaders, Sandy?"

Sandy Swift made a face at Bud. "It could have been true, Mister Barclay!"

"What have you two come up with, then?" asked Hank.

"It is really a most simple and elementary approach," replied Bashalli, "based upon careful and deconstructive analysis of deductive fiction."

"She means who-done-it type stories," Sandy explained.

Bashalli nodded. "Precisely so. Now you see, the true villain, to be revealed on the last page, must not be anyone you would suspect."

"True!" admitted Tom, smiling.

"Yet he cannot be simply a stranger. So we must identify all persons who have been connected to the plot, but who thus far might be taken to be peripheral. One of them is your 'bad guy'," Bashalli concluded.

Sandy produced a piece of notebook paper. "Last night we made a list of suspects—unsuspected suspects!"

"Are any of us five on the list?" asked Tom. "I'd say I'm a pretty good unsuspected subject—maybe I slugged myself!"

"Come to think of it, Sandy, how do we know you two girls didn't sneak on to the island the other night?" remarked Bud with raised eyebrows and narrowed eyes.

"If you're done with your feeble sarcasms, I'll go ahead," said Sandy with a dainty snort.

"There's that flying photographer you mentioned—of course he's a little bit suspected already, but we thought we'd throw him in."

"We don't mind," commented Hank.

"Then there's the old man, Asa Pike."

"Sure!" Bud exclaimed. "He could be the brains of the operation."

"And how about the lobsterman?"

Tom gave a quizzical look. "Who's that?"

"You know, Thomas," replied Bashalli. "You spoke of a man who gave directions."

"Well—he's unsuspected, all right!"

"And how about that man you talked to from the boat company?" Sandy exclaimed.

"Isn't it suspicious that he just happened to have so much information?"

"Not really, Sis. That's why we went to him in the first place."

"I'm just trying to be logical," responded Sandy coolly. "I'll just bet that when this is all over, one of the people on this list will have been involved!"

Tom laughed. "Nothing would surprise me, Sandy!"

For the next several days Tom sequestered himself in his lab, leaving only to go home for supper and breakfast and a night's sleep. Bud sensed that his pal needed some time alone, but early afternoon on the fourth day he casually made his way into the lab and perched on a stool.

Tom gave Bud barely a glance, so concerned was he with some sketches on the table in front of him. But finally Tom muttered, "So how's it going, flyboy?"

"What? You knew I was here all along?" Bud slipped onto his feet and held out his hand.

Tom looked up. "What?" he asked.

"I'm taking you out, genius boy!" declared Bud firmly. "You're getting some air and sun whether you want it or not!"

"But I don't need—"

"Your Mom thinks you do, and so do I. C'mon, it'll clear out your brain cells."

Tom sighed and put down his electronic pencil. "Maybe you're right. I'm sure not getting anywhere here."

The two drove out to Lake Carlopa in Bud's convertible and rented a rowboat at the recreation pier. They also bought a couple sandwiches and sodas.

They rowed out into the lake, and soon Bud's humorous banter had Tom laughing.

"I feel better," said Tom. "But I can't understand why I'm not getting a breakthrough on solving the problem of the fuel solarizer."

"If you'll excuse some unqualified psychology—I think it's because you're trying too hard to compete with your Dad," Bud remarked in a serious tone. "Sometimes you look sort of... well, obsessed. I think it's putting up a brain barrier for you."

"I guess there could be something in what you're saying," Tom conceded.

As they talked, Bud rowed along parallel to the shore. After a time, they came upon a small group of youngsters tossing a football between them. One of them, football in hand, noticed Tom and Bud.

"Say!" the boy called out. "I recognize you! Look, guys!"

"That's right," called Tom in reply. "I'm Tom Swift!"

The boy looked blank. "Who? I mean him—you're Bud Barclay, right? Winning touchdown two seasons back, Dalewood Chips versus Shopton Hammerers!"

Bud looked embarrassed. "Um—yeah, guys. That was me." But not too embarrassed.

At the boys' behest Bud rowed the boat closer and chatted with the small, admiring group. Then the boy with the football tossed it to Bud and asked him to throw a long pass to them.

"Better'n that!" Bud exclaimed, standing up. "Go way long!"

"Er—Bud—" Tom cautioned. But it was too late. Bud was determined to drop-kick the ball from the boat. And he did. Immediately, arms windmilling, he tumbled over the side away from the shore, plummeting rear-first into the lake, sending the boat into a spasm of rocking that Tom could barely contain. The boys on the shore were so busy laughing that they barely tried to catch the ball.

Thoroughly soaked, Bud threw his forearms over the edge of the rowboat and pulled himself up and in, with Tom's help. Then they both dissolved in hoots of laughter.

"Man!" cried Bud ruefully. "I thought I had better balance than that!"

"It was an unfamiliar situation, that's all," Tom reassured his friend. "Besides—pardon my saying—you were showing off, flyboy, and probably packed more force into that kick that was really needed."

"Guilty!" Bud admitted, waving goodbye to the boys on the shore. As he rowed the boat back to the pier, drying off rapidly in the afternoon sun, he noticed that Tom had fallen silent. Finally, in the convertible, he asked Tom: "Okay, pal, what's wrong?"

Tom gave him a surprised look and broke into a broad grin. "Nothing. Matter of fact, thanks to you we're closer to launching the Star Spear than ever before!"

## CHAPTER 5

## THE TOPPLING ROCKET

"COME ON, TOM!" cried Bud, amazed. "All I did was fall out of a boat!"

"Sure. But you did it so—gracefully!" Tom joked.

Bud gunned the engine and pulled the convertible out of its parking space. "So now you're launching the rocket ship from a rowboat, or what?"

Tom didn't reply for a moment, as he seemed to be getting his thoughts in order and making some quick calculations.

"I'll tell you what I'm thinking, and skip the details," he said. "What makes a rocket go up?"

"The thrust."

"Sure, but what is thrust, anyway?"

Bud frowned. "You got me. It's like a powerful explosion going off underneath the rocket—except, unlike something like a stick of dynamite, the explosion just goes on and on."

Tom nodded his approval. "Exactly! A rocket ship is just a solid metal structure that gets blown up, continuously upward so that it never falls back to earth."

"Okay. So?"

"So that's only one kind of thrust, the thrust of external combustion," Tom explained.

"But there's also projective thrust. You just gave a good demonstration, Bud."

Bud grinned. "So call me professor! But what is it exactly? Throwing something?"

"Sure," Tom replied. "Projecting something away from you by whatever means—throwing, kicking, anything. To call on your Mom's illustrious ancestor, it's just another example of Newton's Third Law of Motion."

"I know that one. Every motion in one direction causes an equal motion in the opposite."

"In other words, accelerate a football toward the shore, and you yourself get a push away from the shore."

"I'd say the theory is pretty well field-tested," said Bud ruefully. "But what's your idea, Tom? Lift the rocket by kicking a lot of footballs toward the ground?"

Tom winced. "You think you're kidding, flyboy, but you're closer to the truth than you know. What I have in mind is a mass-accelerator that will use the rocket's fuel as its subject mass—sort of a fuel kicker. If we can accelerate the fuel downward toward its combustion chamber at some very high rate, we'll produce upward thrust before the fuel even ignites!"

Bud was intrigued by the concept. "Maybe you could lift the ship without burning the fuel at all."

"I don't think that would be practical," responded the young inventor. "But by creating a thrust prior to combustion, the ship won't need to burn so much fuel at a time, which means we can keep the solarizer turned down to within its safety limits."

Naturally, Tom threw himself into developing this new idea. With the help of Hank Sterling and his chief model-maker and metallurgist Arvid Hanson, Tom had a small working prototype in hand within forty-eight hours, ready for a series of grueling tests. Finally, the day before the CosmoSoar was scheduled to blast off for its pilotless test flight, Tom was able to phone his father and report that the Star Spear project was again on track.

"Fortunately, we won't need to replace the combustion chambers or fuel tanks, just the pump array and feed pipes," Tom explained.

"Still a tall order," commented Damon Swift.

Tom agreed and added, "I'm having the new mass-accelerator assemblage made here at Enterprises. The core unit will be flown down to Fearing on the Sky Queen. Meanwhile, it makes sense for Bud and I to jet back down there ourselves. I can oversee the first modifications to the rocket ship."

"If you can possibly make it by five in the afternoon tomorrow, you might enjoy watching the CosmoSoar lift off," remarked Mr. Swift. "And no, Tom, I am not rubbing it in!"

Tom laughed heartily. "We'll be there, Dad!"

By noon the day following, Tom and Bud were back on Fearing Island. They flew down on the Kangaroo Kub, a midget jet that was normally carried within the Sky Queen, but had been temporarily removed to make room for the fuel kicker equipment that was to be transported.

"How goes it, Dad?" asked Tom, greeting his father with a warm handshake. The young inventor's demeanor had totally changed: he was once again relaxed and enthusiastic.

"All systems go—as we used to say," Mr. Swift replied. He glanced at his watch. "Less than five hours to launch."

"So what's the plan, Mr. Swift?" Bud inquired. "Is the Cosmo going all the way into orbit?"

"Indeed so. We'll be testing out all systems from launch to splash-down. I'm particularly interested in making sure that the paraglide units function without difficulty. Your lives will depend on it!"

"Don't we know it!" said Tom.

Tom went to his quarters and had a light snack prepared by Chow.

"Say, boss, I been meanin' to ask you something," said the convex cowpoke.

"Sure, Chow. What is it?"

"Wa-aal, what happened to them space fellas you'n your Dad 'as trying to get in touch with?" he asked. "You ever figger out all them injun signs?"

Tom smiled. "If you mean the mathematical symbols on that missile from space—not completely. It's not just a problem in math and science, but a real problem in logic, too. We don't know anything about these beings, not even what they look like."



Chow looked troubled. "So they may be little green men. Or monsters!"

"Maybe," replied Tom. "But you know, the basic laws of chemistry and physics are presumed to be the same throughout the universe, and that puts some limits on the forms viable intelligent life can take. Our space friends may look and think a lot like us." He stood up from the table. "Here, look at this."

Tom switched on a laptop computer and accessed his private, password-protected site. As he scrolled down, row after row of symbols, followed by a word or phrase in English, appeared on the screen.

"What's that?" asked Chow. "A dictionary?"

"Exactly, pardner—my Space Dictionary, as I call it." Tom switched off the computer.

"It includes all the symbols, and arrays of symbols, that Dad and I feel fairly certain about. We have a pretty good portion of the missile inscription translated now."

"What's it say, Tom?" Chow was wide-eyed with curiosity. "Somethin' like 'Take me to yer leader!'?"

"Fraid not," Tom responded. "More like this."

He picked up a pen and wrote on a piece of notebook paper.

WE ARE FRIENDS

WE SEEK KNOWLEDGE

FOUR TO THREE

DIFFICULTIES OF SURROUNDINGS

CAN NOT ADAPT

POSSIBLE THAT YOU ASSIST

CARRY ACROSS

"Well, some o' that's mighty clear, but the rest is clear as mud." Chow shook his head impatiently. "What's this here 'four to three' mean?"

"I think it means they want to travel from the fourth planet—Mars—to the third."

"Yeah, an' that's us, ain't it! So they got 'difficulties' cause o' our 'surroundings,' I guess. What is it they want to 'carry across,' you s'pose?"

Tom shrugged. "It's just an early translation, Chow. Maybe 'carry across' means something more like 'transmit to you through space'."

"A person sure would like t'know fer sure," said Chow.

"We may know our friends better very soon," Tom commented. "The Star Spear will carry along a special video-oscillograph transmitter-receiver setup. From the moment we blast off, we'll be continuously transmitting an array of symbols on a 'logical' frequency that will signify that we desire to exchange messages. Could be we'll hear back from them!"

Chow's eyes grew wider yet at the thought. "Ooo-ee! Now that'd be somethin'!"

After a short nap, Tom decided to join his father and the various technicians and engineers in the mission-control "blockhouse," where the CosmoSoar countdown was proceeding. There were still almost two hours to go before the launching of the unmanned test flight.

As he walked across the old, cracked blacktop that lay between the various buildings of

the complex, a slight wisp of motion in the distance caught his eye and caused him to pause. By this point in the countdown, the Cosmo's three utility gantries were supposed to be off-limits to all personnel. But Tom thought he had seen the edge of a figure duck out of sight behind a support pylon.

What was it? Tom wondered. A seagull?

He stood uncertainly for a time, unsure of whether his half-sighting was significant enough to warrant televoc'ing project security.

I'm sure Phil has enough to do right now! Tom thought. Yet he was troubled. Finally he decided to make a brief side-trip to the gantry, just to put his mind at ease.

Because of its huge size, the rocket ship seemed a good deal closer than it really was. It took Tom a good five minutes of extra walking to reach the gantry. There he halted, leaning back and looking up at the awesome metal pinnacle. The sheer immensity of it seemed to captivate his thoughts, and he had to force himself to remember that he had intended to check out a possible threat.

He began to circle the base of the CosmoSoar, which at the very bottom was almost 100 feet in diameter, with a circumference of about 315 feet. Though the rocket rested upon the looming stabilizer fins that radiated from the base, it was also steadied by the gantries spaced evenly around it.

Having walked more than halfway around without sighting anything untoward, Tom was about to leave the area and resume his walk to the command center when a slight metallic sound coming from somewhere above him brought him to a halt. It was repeated, somewhat louder—the creak of metal.

Realizing that the sounds were coming from the gantry structure, he shielded his eyes from the glare of the sun and looked upward.

This time he saw the cause. Before Tom's horrified eyes, an entire section of the gantry—a latticework of crossbeams—appeared to be groaning and twisting its way out of place. Seconds later it had worked itself free and plummeted down to the steel-concrete surface of the launch pad, a fall of several stories, landing with a deafening crash.

But that was not the worst of it. The gantry now seemed to have developed a "kink" midway to the top. As the gantry bowed more and more to one side, Tom could see the rocket ship itself, no longer supported on that side by the gantry structure, beginning to move against the pattern of clouds in the sky, its silvery nose shifting sideways with aching slowness.

"It's toppling over!" Tom gasped. But it took another moment for the real gravity of the situation to strike home. He was standing next to a giant rocket filled with ultra-explosive fuel—a rocket in the process of collapsing to the ground around him!

## SIGNS OF SABOTAGE

IN THE MISSION command blockhouse, Mr. Swift, Bud, and the entire mission support team were watching the developing situation outside with complete anguish and a sense of utter helplessness.

"What can we do?" cried Bud frantically. "Is the whole thing going to fall over?"

"It could," said Mr. Swift. "For the moment it's only shifted position a bit, but those fins weren't designed to hold up all that weight by themselves—they'll buckle!"

Bud didn't waste another second. Heedless of the shouted warnings of those around him, he pounded out the emergency exit doors of the blockhouse and leapt into a waiting jeep. Gunning the engine he set off for the launch pad, a half-mile distant, with a screech of tires.

Bud blew his horn to catch Tom's attention, and even as he did so he saw the CosmoSoar shift again like a nervous animal waiting to pounce on its prey.

The youthful pilot sent the jeep into an expert half-spin along with a braking maneuver, bringing the vehicle to a stop at Tom's side. Bud leaned out, grabbed Tom's upper arm, and yanked him into the jeep.

But as Bud started back toward the blockhouse, Tom cried out, "No! To the airstrip!"

Bud was amazed. "Are you crazy?"

"Just do it!" Tom commanded with steel in his voice.

Minutes later the jeep pulled onto the island airstrip and braked to a halt. "Okay, now what?" asked Bud.

"Now this!" Tom exclaimed, jumping out. He ran to a large twin-bladed cargo helicopter which had been ferrying heavy equipment from the mainland. Bud followed, and in seconds—which felt like hours—they were airborne.

"But what can you do, Tom? This whirlybird isn't nearly strong enough to lift up the rocket!" objected Bud.

"We don't have to lift it, Bud," Tom replied. "We just have to steady it and keep it balanced until Dad can put together some kind of makeshift support."

Because of the chopper's overhanging blades, the helicopter could only make direct contact with the CosmoSoar at its very tip, which was now a few degrees off the vertical. Tom maneuvered the craft in close and gently brought the two hulls together. Even as he did so, the rocket jerked another several feet, swatting the helicopter aside as if refusing to be tamed.

The chopper rocked back and forth and Tom had to take a moment to steady it, flying off and around in a semicircular path. Then he closed in again, and the two craft touched

with a clank of metal.

"Now comes the hard part," Tom murmured, his attention focused like a laser beam. He poured power into the tilt-axle rotors, forcing the helicopter sideways against the tip of the rocket.

There was a rasp of metal against metal. Then Bud cried: "It's working!"

Ever so slowly, inch by inch, the CosmoSoar resumed its upright orientation. As Bud took over the controls, Tom contacted his father.

"You've saved the project, Tom!" cried Damon Swift. "I've been looking at the sagging gantry through binoculars, and I think we can patch it up in a couple hours time—maybe less. Do you have enough fuel to hold your position?"

"More than enough," Tom replied.

It was only a matter of some seventy minutes before Tom and Bud were finally able to pull away and return the helicopter to the airstrip.

"Oh man!" Bud exclaimed. "Talk about sitting on a ticking bomb!"

Tom looked into Bud's eyes. "Thanks, Bud."

"I just sat there next to you, genius boy."

"I mean—thanks for coming for me. That rocket could easily have come down on both of us."

Bud looked away, modest and moved. "What do you think happened to the gantry in the first place?"

"It could be just an accident," Tom replied. "Or—"

"Not!" Bud finished.

"I'll admit I'd like to take a look at a fragment of that wreckage," conceded Tom. Taking the jeep, he and Bud returned to the launch pad area. Stopping near the pile of twisted metal that had fallen from above, Tom searched for clues.

"Here's something," he said, pointing.

"I don't see anything, Skipper," declared Bud; "just the end of a beam, with the holes for the bolts to go into."

"Exactly, pal. And part of what you're not seeing is any sign of a crack or break in the metal itself. The beam fell because the bolts gave way on this joint—all of them at the same time."

"Okay. What could have caused it?"

"As a guess—some kind of acid," responded Tom. "Someone could squirt a few drops of a slow-acting acid on the bolts, and then make a quick getaway before the bolts are far enough gone to twist free."

Tom informed Phil Radnor of his findings and theory, using his televoc. Soon he and Bud were joined by several members of the island security team as they scoured the launch pad for traces of the missing bolts.

"Got one!" exclaimed a woman.

"Make sure you only touch it through your Tomasite gloves," Tom warned. "That acid could be potent stuff!"

As the woman held up what she had found, Tom scrutinized it minutely. "Look, Bud, see

these little sections?"

"Looks like a rat got ahold of it—a metal-eating rat!"

"It's where the droplets of acid fell."

"Then you were right!" said Bud angrily.

"And you were right too, pal," remarked Tom. "This was certainly not an accident!"

A visit to the blockhouse confirmed what Tom had expected—the CosmoSoar launch had been suspended. It would take days of careful re-checking before the ship could again be deemed ready for its test flight. As the boys left the blockhouse, Bud suddenly grasped Tom's arm.

"Hey, I just thought of something!" Bud cried. "If somebody's in the mood to take down our rockets, your Star Spear may be next!"

"You're right!" Tom gasped.

The two headed off in a dead run toward the Star Spear, sitting on its own launch pad a quarter mile in the opposite direction from the Cosmo.

Breathless, Tom greeted the two security guards on duty, who were familiar to him from his weeks on the island.

"Everything okay here, guys?" asked Tom, Bud at his side.

"No problems, Tom," said one of the men, whose name was Garnan. "After all that hassle with the big rocket, we wondered if somebody'd try something here. But it's been quiet, just that one engineer you sent over."

"Engineer? What do you mean?" Tom demanded.

The two guards exchanged alarmed glances.

"He said his name was Eskol, Hiram Eskol, and he was here to seal the valves before you pull the pump units."

"It sounded pretty plausible," said the other guard, shamefaced. "He showed us his identification badge, and he was wearing one of those white 'clean' suits that people have to wear while working on the equipment."

"What did he look like?" Tom asked brusquely.

"Well, you know, he looked just like his photo," said Garnan in a defensive tone. "Sort of nondescript, middle-aged, thinning hair."

Bud groaned. "So you didn't pay attention to his face!"

"Well, no, not really."

Not wanting to waste any more time talking to the guards, Tom and Bud raced to the gantry elevator, coming to a stop at the top of the rocket, next to the access hatch for the pilot compartment.

Tom was in a frenzy of worry. He had left no instructions for further work on the Star Spear. The replacement of its inner works was not scheduled to begin for another 48 hours.

Panic seized him. Turning on the lights inside the capsule-like compartment he glanced from left to right. He relaxed slightly when he saw that everything seemed to be in order and untouched.

"Looks ship-shape to me, pal," commented Bud, who had trained for many hours inside

the compartment.

"There's still the electronics bay overhead," Tom noted.

Quickly Tom climbed the small wall ladder to the most vital part of the rocket—the sealed module inside the tip of the rocket which contained the craft's guidance system and electronic monitoring equipment, as well as the video-oscillograph device with which Tom hoped to make contact with the mysterious space beings.

He reached up and touched the hatchway panel—and his heart froze in his chest. The access panel was unsealed and unlatched! He swung the panel upward and poked his head and arm into the small compartment, switching on a utility light.

"No! Oh, no!" he cried involuntarily as he gazed around.

The space transmitter was completely wrecked! And most of the other electronics systems had been put out of commission—by brute force!

## CHAPTER 7

### A WELL-WRAPPED SPY

TOM STOOD dumbfounded for several seconds, then he sprang into action. He must capture the saboteur! He came clattering down the ladder and invited Bud to take a look at the damage.

Bud did so, and whistled in dismay. "Looks like somebody's got a real problem with circuit boards! Can this stuff be replaced, Tom?"

"Of course, but it'll delay things. Someone is working hard to wreck my project," Tom declared grimly. "He—or they—thought I wouldn't find out right away; maybe not until we started to install the new propulsion system."

Bud nodded his agreement and added: "Now you're a step ahead of their game."

"Sure," said Tom bitterly, "a step ahead of being ten steps behind!"

Re-entering the electronics bay, Tom Swift carefully wrapped several hacked-up sections of the instruments in a handkerchief so that they could be examined for fingerprints.

Finding a small hammer, which probably had been used in the fiendish act, he picked it up with a pair of pliers in his trousers pocket.

Holding on with one hand, Tom went down the ladder, and he and Bud took the gantry elevator to the ground. When they emerged, Tom asked the guards further questions.

"When did this man Eskol actually leave?"

"Well actually," said Garnan, "he wasn't up there too long—maybe ten minutes."

"Didn't say g'bye, neither," said the other guard.

Tom sighed but put a hand on Garnan's shoulder. "Don't worry, you two aren't in any trouble. I just needed to know exactly what happened."

"Told ya, Fred!" snapped the other guard. "The Swifts are good people!"

As the boys strode rapidly across the wide asphalted field that separated the two launch pads, Tom was shaking his head in frustration.

"Do you think this Eskol was the same guy who attacked you the other night?" Bud asked.

"Doesn't sound like it. That was a younger guy, with a full head of hair," replied Tom.

"Besides, how could he have gotten back on the island?"

"We don't really know he ever left, Skipper," Bud pointed out. "We only know one of Phil's security guys was knocked out, and a boat is missing."

"That's true..." Tom's voice trailed off, and his steps seemed to miss a beat.

"You're doing that thing again, aren't you, Tom," Bud remarked.

"What thing?"

"Thinking!"

Tom chuckled. "That's what they pay me for, Budworth! I was just turning over a few things in my mind. We now have two people involved in the plot—the guy who slugged me, and the rocket wrecker, who's probably the one who also sprayed acid on the CosmoSoar's gantry bolts."

"The timing's about right," Bud agreed. "And we figure that billionaire yachtsman is involved, too—because of the money trail and the connection with those jet-boats up in Maine."

"So what does it all add up to?" Tom wondered. "So far, nothing!"

"Do you think one of the other competitors in the space race might be trying to sabotage the competition?" speculated Bud.

"I don't know. Maybe," the young inventor admitted. "But it's hard to believe any of the big multinational concerns we're competing against would risk their reputations in that way."

"Well," said Bud as they neared the row of administration buildings, "maybe Sandy and Bash are right. Maybe we should be looking for somebody even more unsuspected!"

Tom was silent for several long moments. Then he tugged on Bud's sleeve and led his friend into the facility infirmary.

"Hi, Jennifer," Tom said to the young nurse sitting at the front counter. "I was passing by and thought I'd look in on that security patrolman who was brought in last week. You know, the one who was beaten and left tied up."

"Oh, Brad Yardell?"

"Yes," said Tom. "I haven't had a chance to thank him for putting himself in harm's way."

The nurse smiled at Tom and Bud. "What a nice thought!"

"How's he doing?" asked Bud. "Were his injuries very severe?"

"Well, let's see," she replied. "Some abrasions to his wrists and ankles—because of the cord they used to tie him with. Most of the damage was neck-up, though."

Tom nodded his understanding. "To his jaw?"

"It wasn't broken, but there was quite a lot of swelling around his lips. And also—"

"Damage to his cheekbones, and the bridge of his nose." The young inventor completed her sentence for her, continuing: "And also up here." He touched his brow, and then added: "Oh, and a front tooth knocked out or broken."

The nurse nodded but looked surprised. "I didn't realize you'd been given a report."

"Haven't been," said Tom with a smile. "Is he able to talk?"

"Yes. In fact, he was able to talk right away, though he was a little hard to understand."

Jennifer now led the boys down a short hallway. "Mr. Radnor interviewed him when he was brought in."

"I'm glad he's doing well," Tom remarked. "Any idea when he'll be released?"

Jennifer stopped in front of the doorway to the six-bed ward. "Any day now, Dr. Carman thinks. But he's still having some problems with balance, so we're being cautious."

"One more thing," said Tom as the nurse was about to return to her post. "Has he been asking for pain medication?"

"Oh, not often since that first morning."

"Mostly at night, I'd guess."

"Yes," she replied, "as a matter of fact."

Tom now entered the ward, blithely ignoring Bud's quizzical expression. Only one bed was occupied, its occupant heavily swathed in bandages from forehead to chin.

"Brad, is it?" said Tom. "I'm Tom Swift. This is my friend Bud Barclay."

Yardell offered his hand to each in turn, mumbling "Pleased to meet you" in a low, raspy voice.

Tom picked up a clipboard hanging at the end of the bed and examined it. "Glad to see you've been upgraded. Doing okay now?"

"All right, I guess," said Yardell. "Did you want more info about what happened?"

"No," Tom responded. He turned to Bud. "At night he's looked in on every ninety minutes by whoever is on shift. More often during the day. Of course, if he needs anything, he can always ring-up the desk by pushing the call button."

"That's great," said Bud cautiously, having no idea what Tom might be getting at.

Tom now sat down on Yardell's bed, on top of the blankets on the untucked side. "Sit down, pal," said Tom to Bud, nodding toward the other side of the bed. "We shouldn't be standing, next to someone who can't get up." He shifted his gaze to Yardell. "Kinda makes a person nervous—just my opinion. So let's see," said Tom. "Ninety minutes. Kind of a good long time, isn't it? But it's not like the changing of the guard at Buckingham Palace. The nurse might be a little late one time, a little early another. So what you really need to do is to sort of lock it in—for example, by calling the nurse for pain medication in the middle of the night. After she's taken care of you she'll make a mental note of exactly what time to look in on you again, ninety minutes later. She



leaves—you wait a while—then you get out of bed, throw on that overcoat I see over there, pick up your cheap hospital slip-ons, and sneak around the corner into the empty doctors' lounge. Out through the window and into the bushes. In fifteen minutes you're at the shoreline, guiding a very small, low-in-the-water boat onto the beach, with—what?"

"Infrared flashlight," said the man gruffly.

"Yeah," said Tom. "You help your partner unload his supplies, the stuff he's going to use to wreck the rocket projects. Then you stick the boat, a WaveSkimmer, in its prepared hiding place, which is also where your partner Mr. Goff will be hiding for the next week or so. Then back to bed!"

Bud's face had long since assumed a look of amazement. As for the man in bed—pinned in place by the way the two boys were sitting—he uttered a derisive snort.

"Pretty good, Tom Swift," he said. "Except it wasn't Goff. Goff isn't qualified for that kind of work."

"Then I got one wrong, and one right." Tom turned to Bud. "Bud, meet Arthur Gray. He and I are already acquainted. That is, he and the side of my head!"

Bud bunched up his fists. "For what you did to Tom the other night, I should make you need those bandages for real!"

"Come off it, kids," said Gray sarcastically. "What laws did I break? Unauthorized use of a window? Wasting bandages? Charge it to my medical plan. As for you, Swift—seems to me you were sneaking up on me, from behind! I was just defending myself."

"It won't wash," cried Tom angrily. "You were sabotaging the solarizer machine!"

"Naw," said the man. "Just taking a look. No harm in that."

"And this is a government-restricted facility, pal!" Bud exclaimed.

"Really? I must've missed the posted signs you're required to have, by federal law."

Tom could imagine Gray's face assuming a smug look beneath the bandages.

Seeing that there was no use in questioning the man any further, Tom contacted Phil Radnor. In minutes the bandaged man was whisked away past the eyes of the astonished nurse.

"They call it hiding in plain sight, guys," said Radnor. "You can imagine how I feel."

"Or how I feel!" groaned Tom. "Even under those bandages, I might have recognized him if I'd just taken the time to look."

"You wouldn't have," said Bud reassuringly. "What put you on the trail, anyway?"

"Just the 'unsuspected suspect' idea," Tom replied. "When you mentioned it again, it occurred to me that the so-called victimized patrolman was connected to the events, but hadn't been considered."

"What happened to the real patrolman?" asked Bud after a sober pause, knowing that the truth might be dreadful. Tom had no answer, but by evening Phil Radnor had put some more pieces of the puzzle together. The real Brad Yardell had flown out of Fearing Island only hours prior to the first incident, headed toward a scheduled vacation along with several other employees.

"When you first saw him, Tom, Arthur Gray had already gotten into the project

computer and altered Yardell's record, so we thought he was still on the island. The two resemble one another slightly, and I've never met Yardell—most of these guys were trained by Harlan Ames," explained Radnor. "Any differences were attributed to the muffled voice and messed-up face."

Bud shook his head in disbelief. "The guy must be pretty desperate for money to allow himself to get beat up that way, just for a disguise!"

"I don't think it was all that dramatic, Bud," remarked Tom. "All the so-called 'damage' could be faked in advance by an experienced plastic surgeon and then covered-up by special makeup and prosthetics, which he removed after my encounter with him. I'll bet the gold tooth I saw was implanted to be easily pull-outable."

"Might even have been a Hollywood-style prop," Phil Radnor said. "Of course the whole idea was to secure himself as a spy in our midst long enough to help his crony set up shop."

Tom looked thoughtful and troubled, and Bud asked him what was on his mind. "It's just that—if that was his goal, plus doing a little damage to the solarizer if he could—why hadn't he already made his escape? There must have been something more to be done, evidently in the next week or so."

"Well, he won't be doing it now," Radnor declared. "He's on his way to the mainland in the custody of two federal marshals. But the phony engineer is still at large."

"In any event, I'm most relieved to know Yardell is alive and well," said Tom's father, who was present for the evening report. He added: "I'm also pleased to say that from early indications any damage to the CosmoSoar from its unsettling experience was minimal. The weather is a bit dicey right now, but I've rescheduled the pilotless launch for Monday."

Bud turned to his friend and asked sympathetically, "But how about the Star Spear?"

"Who knows?" said Tom. "We'll do the electronics repairs at the same time as we swap-out the propulsion system. With luck—and we haven't seen much luck recently—we'll be ready for a test flight in a week or so."

Damon Swift gave his son an affectionate squeeze. "Tom, you and Bud brought the CosmoSoar project plenty of luck today. I'll bet it rubs off on the Star Spear too!"

The next day brought to Fearing Island the first of several big cargo jets that would be conveying some parts of the new propulsion system that had been manufactured by a contractor in Ohio. Tom and Bud watched as lengths of specially fabricated metal conduit pipes were unloaded in the bright Atlantic sunlight.

"You know, genius boy, other than the general idea—the Bud Barclay Principle—you haven't really told me how your new baby's going to work," observed the dark-haired pilot.

Tom grinned at his pal. "I didn't want to be one of those boastful fathers. But since you asked, the whole fuel kicker set-up is really pretty simple."

"Go ahead, convince me!"

"Well, originally we were pumping the oxidizer component of the fuel from the big tanks to the solarizer, and then down to the combustion chamber," said Tom, visualizing

the process in his mind's eye. "There the two fuel streams would be mixed together in a fine spray, and because the fuel is hypergolic, it—"

"'Hypergolic!' sounds like something the people on the ground yell when the rocket blasts off."

"It means the two fuel components are self-igniting when mixed," Tom explained.

"Unlike the mixture of gasoline vapor and air in a car engine, which requires a spark to set it off."

"Proceed, Professor."

"Well, even though we had to do some very high-speed pumping in the original system to keep up with the rate of combustion, the approach was purely mechanical. Matter of fact, at some points we had to deliberately impede the flow so as to keep it steadier."

"A basic plumbing problem, in other words," Bud commented.

"Don't ask me," Tom replied. "I don't understand plumbing! Anyway, the new engine handles the whole thing very differently. The fuel kicker is a mass-accelerator—it actually pushes the oxidizer and the fuel down the twin feedpipes with as much accelerative force as we can manage, and shoots them right out into the combustion chamber with almost no 'choking' at the end."

"And accelerating the masses down helps the rocket ship go up," said Bud.

"Right," Tom confirmed. "An ordinary pump couldn't do the job, so I took a new approach. The two fuel streams, which are already in the form of small suspended droplets, carry an electric charge. That means I can use an electromagnetic flux, running along the length of each conduit, to accelerate the streams. The fluxor coils are built right into the material of the tubing, so the main thing is to make sure the feedpipes are strongly anchored to the frame of the ship."

"I think I understand everything, Skipper," Bud said. "The fuel still ignites down below as before, right?"

"Yes, it's just moving at hypersonic speed when it does."

Bud squinted in thought. "Say—what about that electric charge on the fuel? Aren't you worried about hurling lightning bolts or something?"

Tom laughed. "I worry about that all the time, pal. But in this case, the two fuel streams have opposite charges, positive and negative. The forces of attraction cause the droplets to mingle more densely in the chamber; more importantly, the charges neutralize one another before the burning gasses even leave—"

Tom broke off abruptly.

"Don't tell me you just found a flaw in your system," moaned Bud jokingly. When Tom did not respond, Bud followed his friend's gaze, even as his ears caught a metallic banging and rumbling sound.

Bud gasped in dismay. A number of the large feedpipes, thick around as oil drums and long as telephone poles, were rolling freely across the asphalt directly toward them!

## CHAPTER 8

### SCOPING OUT A YACHT

AS THE THICK, sturdy pipes bore down upon them, Tom and Bud stirred themselves to action. They whirled about and sprinted away from the pipes, at the same time angling off to the left.

Bud chanced a glance over his shoulder and groaned inwardly. The cylinders had spread out in all directions on the uneven asphalt surface, and it appeared impossible that the boys would be able to outrace or avoid them. He knew that the impact would certainly leave them bruised, and possibly break a bone or two!

"Bud!" gasped Tom at his side. "Over the top!"

Grasping his friend's meaning, the young pilot pivoted and did his best to launch himself upward into the air. The boys leapt side by side, and the first of the pipes rumbled past beneath them, just touching the soles of their shoes.

"Skipper—again!" cried Bud. A second pipe was bounding toward them only a few yards behind the first. Tom cleared this second pipe too. But Bud, his timing thrown off by his warning, came down directly atop it!

Tom winced, expecting the spinning cylinder to toss Bud to the ground. But his pal's natural athletic prowess came into play. Bud managed to keep his footing, "running in place" on top of the pipe for a good distance before he finally jumped free.

In moments all the rocket pipes had clattered to a stop, and members of the work crew had run up to Tom and Bud.

"Mr. Swift," said the foreman, "I'm sorry, real sorry. The lift-loader wasn't quite in place when we started to shift-out the pipes, and they all went loose at once!"

Tom nodded, silently. Bud could almost read his friend's thoughts. An accident—or more sabotage?

But after a quick examination of the loader vehicle, Tom let the incident pass.

"No sign of tampering," said Tom softly as he and Bud walked away. "But it'll push back the launch of the Star Spear a little more, because now I'll have to have those feedpipes tested for hairline fractures."

Tom sighed, and he knew Bud Barclay shared in his frustration.

Checking in at the security office, Tom found a message awaiting him.

"This is more like it!" he said to Bud. "It's from special agent Asa Pike!"

The note indicated that Pike had left a message on Tom's private voicemail, which Tom accessed immediately, putting the telephone on speaker setting so Bud could listen in. "Looke h'yar, you young fellers," said the familiar voice with its flinty nor'easter twang. "Here's suthin' of interest to ye, I'd say. I recollect you asked about some big yacht t'other day. Well-by-jing, I hadna seen it then, but I sure have now—she's a-sittin' out just off Hankton Point, big as life. Kin see 'er from here, pay phone at Art's Gas. Lemme see, now—that a H? H...E...R...guess it spells Heraklona. Ain't thet th' name you said? Any-ol'-ways, all fer now."

"What should we do now, Tom?" Bud asked after Tom had switched off the phone unit. Tom's eyes sparkled. "Well," he said, "I think it's time for a little experiment. Say, have you met very many multi-billionaires?"

Bud pretended to search his memory. "Nope. A few plain billionaires, but no multi-billionaires."

"Want to?"

"I suppose I wouldn't mind it!"

Tom explained the plan of his "experiment" to Bud, and within the hour the two youths were airborne on a northerly bearing in a Swift Construction Company amphibious jet. "So you don't think our Mr. Odyssey should be given advance warning?" asked Bud, at the controls of the small jetcraft.

"No," Tom replied, "it would just make it convenient for him to decline our offer to drop in on him—and we can't have that!"

The northward flight went smoothly. As the jet came opposite New York City, Tom had Bud turn east, heading out over the Atlantic for several hundred miles before turning north again. A half-hour later they changed course once more, heading inland toward the coast of Maine.

"At least it looks like we're coming from someplace other than Fearing Island," Tom remarked.

Even before they noted the coves of Hankton in the distance, Tom and Bud could see the impressive form of the Heraklona silhouetted against the glittering waves below.

Bud whistled admiringly. "She's a big one all right!" The sleek-designed diesel craft was less like a yacht and more like a small cruise ship.

Bud brought the jet in low on the water, at an angle which suggested that they merely intended to taxi past the yacht toward Hankton. As they bounced along on the waves, raising a spray, Tom activated a small device that he had attached beneath the fuselage. The device emitted a plume of smoke. At the same time, Bud up- and down-throttled the jet engine, causing the plane to advance irregularly. Finally Bud cut the engines completely. Seemingly helpless, they bobbed along within fifty yards of the Heraklona. Tom switched on the radio. "T-Bird to Heraklona. Say, guys, we're having some engine problems. Any chance you could pick us up?"

There was no answer, and Tom repeated the message twice more. Finally the radio crackled to life with what were evidently a series of questions—but posed in a language neither Tom nor Bud could understand.

"Oh, great," said Bud.

"They're speaking Greek," Tom commented. "I know that much, anyway." He switched on the microphone again. "Heraklona—anyone there speak English? English?"

A heavily-accented voice came on. "Eengleesh, yes, yes—leettle bit. You are trouble?"

"In trouble—yes," answered Tom.

"We come pick you up."

The boys watched as a small motorboat was lowered from the yacht, carrying two men. Pulling up beside the jet, they helped Tom and Bud aboard. Tom tried to engage them in conversation, but they only shook their heads as they headed back.

Debarking upon the broad deck of the yacht, they were guided to a large, well-appointed lounge, where a tall man in officer's garb awaited them.

"Ah! My friends!" he said, shaking their hands. "I am welcoming you to this, the Heraklona!"

"Thank you for your assistance," said Tom. "We won't trouble you for long."

"Please, ees no trouble! I am captain here, Gregor Mitrou."

"Good to meet you, Captain Mitrou," Tom said. "The Heraklona—isn't this the Odysseus yacht?"

The Captain nodded with obvious pride. "She is that indeed. Very big!"

Bud now spoke up, trying to appear casual. "You know, I watch Mr. Odysseus's network all the time. I sure would like to meet him!"

"Ah." Mitrou's smile and gracious manner vanished instantly. "Perhaps it shall not be possible. He has left instructions that he is not to be disturbed." The captain shrugged.

"But as you say, not the venture, not the gain. Let us see."

He walked to the other side of the salon and picked up a telephone. There was a short conversation which the boys could not hear. Then Mitrou beckoned them over and handed the receiver to Tom, who angled it so that Bud could hear as well.

"Hello?" said Tom, tentatively.

"Have I the honor of addressing the young Mr. Swift?" came the reply in cultured, slightly accented tones.

"Oh," said Tom in surprise, "I didn't realize you—"

"But of course I know who you are, you and your friend Mr. Barclay. Captain Mitrou recognized you immediately. You have made a surprise for me, perhaps?"

"Well, we didn't know if you would care to see us, Mr. Odysseus," Tom admitted. "And we have an important matter to discuss with you."

"Then I think there is no trouble with your plane?"

Tom reddened, ashamed. "No. I apologize."

"Oh, why apologize?" exclaimed Odysseus. "Did I apologize for sending that photographer to take pictures from up high? No! We do what we must, eh? Now then, what do you wish of me?"

"Perhaps the three of us might sit down and—"

"No," interrupted the multi-billionaire brusquely. "I have not the time, nor the interest. This is as close as we shall get to chatting, I think."

Pressured by the moment, Tom formulated his main questions. "Sir, are you acquainted with a man who lives in Hankton, a man who owns several jet-boats?"

"What is Hankton?"

"It's the town you've been anchored next to."

There was a pause on the other end of the line. "Captain Mitrou stops here to get supplies for my Heraklona—out of the public eye, you see. I know no one who lives here. Should I?"

"No sir," Tom responded. "We just thought you might—you're both—you both have a lot of money."

"His name, please?"

"He calls himself Arthur Gray," said Tom carefully.

"Of him, I have not heard. And you know something? If I have not heard of him, I bet I have ten times the money, so forget him!"

With a glance at Tom, Bud joined the exchange. "Sir, there is also a man named Goff, and someone named something like Paul-o."

"I have no knowledge," said Heliak Odysseus. "What do you wish of these men?"

"They've interfered with our rocket project," Tom replied. "We're trying to find out as much as we can about them."

"No doubt you come to me because of my little stunt the other week." Odysseus sounded thoughtful, not offended. "Your reasoning is good, but in fact I know nothing of this. And now our chat is at an end."

The line went dead, and Tom hung up the telephone. "We'll be going now, Captain," he said. "As you heard, our plane is—just fine."

"We will return you to it immediately," said Captain Mitrou stiffly.

In minutes the boys were back aboard the Swift Construction Company amphibian. Bud began to warm up the jet engines.

"I guess our scope-out turned out to be a wash-out," said Bud. "Do you think he was telling the truth?"

Tom shook his head. "I feel he wasn't."

The jet began to taxi across the water, picking up speed. Bud pulled back on the wheel, expecting a smooth response. But the T-Bird failed to lift off from the water, shaking and wavering unsteadily as it skimmed the waves.

"Hey, flyboy," exclaimed Tom, "we don't need to pretend anymore!"

"Who's pretending?" Bud cried in alarm. "This bird's got lead feet! I can't get—"

At that moment the nose of the jet seemed to take a dive toward the ocean, slamming into a low-rolling wave with surprising force. Tom and Bud were jerked forward against their safety restraints and momentarily stunned. As Tom's eyelids flickered into unconsciousness, he saw to his horror that water had begun to pour into the cockpit.

They were sinking!

## CHAPTER 9

### AN INVENTIVE ESCAPE

TOM'S FIRST THOUGHTS as he regained consciousness were pure instinct—the impulse to struggle against the threatening waters.

He began to thrash his arms, but they met no resistance. Only then did he realize that he was high and dry.

"Bud?" Tom called out tentatively.

"Here," came the response with a groan. Bud sat up behind Tom, rubbing his head.

"Where are we, Tom?"

"Not on the jet, that's for sure," Tom responded. "And not on board the yacht either."

The young inventor stood dizzily and surveyed their dim-lit surroundings. They were in a sparsely furnished, one-room building of strong wooden construction. Two windows, one in front and one in back, were set high in the walls. Ominous metal bars were set in the window frames, also of metal. The boys were still wearing their flight clothes, though their pockets had been emptied. Tom noted that their garments were stiff and showed traces of salt, but were only slightly damp. Apparently a fair amount of time had passed since their accident.

Bud tried the room's single door, careful not to make a sound. Then he shrugged—it was locked and had no give at all.

"Boost me up to the front window and I'll take a look outside," Tom said. His friend swung him upward with an easy movement, bending over so Tom could stand on his shoulder blades.

"We're at the edge of a woods," Tom reported in a whisper, "next to a shoreline with a dock. I see what looks like a plane hangar. There's a big cargo seaplane at the dock, maybe a hundred yards off, being unloaded by several tough-looking—uh-oh, a bearded character's heading this way!" Tom jumped down to the floor, softly.

"Let me see him," Bud whispered. Bud unbuttoned his dark shirt and pulled it up to cover his face, peeking out with one eye through the collar. Then Tom boosted him up. After a moment Bud said, "The bearded guy's got a rifle. He's stationed himself so he can watch the door." Bud jumped down again. "So what's this all about, Skipper? Is Mr. Moneybags holding us prisoner somewhere?"



"Let's just say we were taken, pal!" responded Tom. "Obviously somebody fooled around with our plane while we were on the Heraklona, probably on orders from Mr. Odysseus. But we don't know."

As Tom spoke he was inspecting the window frame and the bars. Even from a couple feet below them he was able to judge that they were made of aluminum. "If I only had some mercury and a glass of water, we could get out of here!" he said.

"Sure," said Bud. "The old mercury-and-water teleportation machine!"

Tom smiled and continued his examination of their prison. Suddenly he stopped.

"Just the thing!" He whispered excitedly. "That thermometer on the wall. Bud, ask the guard for a drink of water."

"Okay. But why?" Bud gave his pal a puzzled look.

"I want to try a little experiment," Tom replied as he took down the thermometer.

"Seems to me you said the same thing just before we took off to visit Odysseus," Bud commented dryly. But he rapped loudly on the door until the bearded guard came and unlocked it, pushing it open with his foot and then standing well back, rifle trained menacingly upon Bud.

It soon became evident that the man did not understand English. Bud went through the motions of drinking. The guard obliged with a bottle of water, and then secured the door again.

"Expensive water," Bud remarked, handing Tom the plastic container. "Served in only the finest restaurants!"

Tom climbed onto Bud's shoulders again, but this time at the rear window, which revealed a view of the woods and distant mountains. The young inventor broke the thermometer tube and let the mercury drip onto various sections of the aluminum frame. Unable to watch the details of Tom's "experiment," Bud waited in fascinated silence.

"This mercury ought to cut through the oxide surface of the aluminum," explained Tom.

"Now for the water."

Bud handed up the bottle and slowly Tom dribbled small amounts onto the places where the mercury drops had fallen. The aluminum began to dissolve. After several applications, the chemical reaction had eaten through the frame.

"I've done it!" Tom exulted.

"Yeah, big deal—anybody can melt a window frame!" joked Bud Barclay with an excited grin. "So now what?"

"After I pull these bars out, we're going to get in that cargo plane."

"How about the guard?" Bud asked as Tom easily yanked out the window bars and handed them down to Bud.

"We'll take care of him. Come on!"

Tom scrambled through the window but didn't drop to the ground, hanging onto the window sill by hooking his armpits on it, his arms still extending downward into the interior of the room. Grasping Tom's hands, Bud was able to boost himself up and over the sill. They both dropped as quietly as possible onto the layer of pine needles that blanketed the ground.

"I'll duck behind that big bush," Tom whispered. "You make a sound to attract the guard. When he comes around here to investigate, jump him!"

When Tom was well hidden about ten feet from the building, Bud broke off a stiff branch and banged it around on the side of the building. The guard heard the sound and rounded the corner at a run, muttering to himself and clutching his rifle.

His chin ran hard into Bud's hurtling fist, and the guard dropped to the ground unconscious. Tom now darted out of his hiding place to assist Bud in handling the big man. The boys used their belts to bind the man's ankles and wrists in such a way that he would be unable to untie them without assistance.

"What if he starts yelling?" Bud cautioned.

"We have one more belt to use," Tom pointed out, "namely his own." Using the guard's belt and a wadded-up strip of cloth torn from Tom's shirt, they created an effective gag for their unconscious adversary. Then, not wanting the guard to be seen immediately by anyone who noticed his absence from his post, they hoisted him up and through the window. A loud thump! from inside told them he had hit the floor.

"He's gonna have some bruises tomorrow!" remarked Tom in a whisper, grinning.

"Now let's get out of here!" Bud urged.

Running at top speed through the woods, the two did not pause until they came to a small rise some fifty yards from the cargo plane.

"We can watch for our chance from here!" Tom whispered, and crawled forward to the edge of the underbrush.

There was a bustle of great activity at the docked sky freighter. The four-man crew, occasionally shouting in a guttural foreign language which the boys did not understand, carried box after box down the ramp to small trucks. Finally, the pilot waved to the truck drivers.

"They've finished discharging the cargo," Tom murmured. "Now if all of them will only leave!"

To the boys' relief, the pilot and his crew hopped into one of the trucks and rode off on a dirt road, heading away from the youths. Tom nudged Bud—the words on the side of the truck appeared to be written in French.

"Looks like dinner time," Bud commented. The sun was low on the horizon.

"This is it!" Tom cried. "Dig for the plane!"

"Okay, Skipper."

They raced across the rough ground and onto the dock. Only a short distance remained to be covered when Bud spotted a guard with a rifle atop the hangar, momentarily facing away from them.

"Step on it!" he hissed.

Tom scrambled into the big plane. Looking back only long enough to see Bud inside and hauling up the ramp, which also served as the door, he continued straight through the empty cargo space into the pilot's compartment. Leaping into the seat, he fired the starter and pushed the throttle forward. The jet engines thundered into action. Without losing a second, Tom gunned the plane out across the water and it rose into the air.

Bud now plopped down next to Tom, breathing heavily. "Say—look at this," he said. "Clues galore!"

He had picked up a sheaf of papers attached to a clipboard. "What are they?" Tom asked. Bud studied them for a few moments, then replied, "Invoices for machinery, addressed to the Excelsior Oil Company, Ltd. It has a Canadian address."

"That figures. The writing on the side of that truck was in French," Tom remarked. "Let me take a look at those." With Bud steadying the controls, the young inventor scrutinized the invoices for a minute, flipping from one to the next with growing excitement. "Bud, this equipment and machinery—it's just what a person would need for a manned rocket project!"

"Good gosh!" cried Bud. "I'll bet Excelsior Oil Company is their rocket base! Tom, these guys must be trying to beat Swift Enterprises into space—that's what this is all about!"

"That's what it looks like," Tom agreed.

"So where to, genius boy?"

"I'm betting we're in French Canada somewhere—so southward we go!"

As he turned the plane southward, Tom looked down and saw a jet seaplane taking off from the body of water below, which was now revealed to be a lake. He opened up all three engines and the plane sped along on its course.

Before that interceptor can catch up to us, we'll be back in civilization, Tom thought hopefully.

As Tom throttled forward, the jet was suddenly seized by vibration, and the boys could hear a whistling sound from the cargo hold behind them.

"Guess I didn't pull that hatch all the way shut," Bud said. "I'll take care of it."

Tom checked the controls and noted that the fuel levels were fairly high. If we're anywhere near central Quebec, this should be sufficient to reach the U.S., he said to himself.

A sudden strangled cry from the cargo space snapped the young pilot out of his musing.

"Tom! Tom!" he heard Bud calling faintly.

Putting the plane on automatic pilot, Tom started back to see what was wrong. When he reached the rear of the cargo space, he stared in horror. Bud's arm was trapped in the narrow gap between the slightly-open loading door and its frame.

A strong wind could tear the door off and blow his friend out!

## ROBOT AT WORK

TOM STARTED forward to extricate Bud's arm when a blast of gunfire ripped into the starboard wing.

"Don't let 'em get us!" Bud pleaded, wincing in pain. Every movement of the plane forced his arm down further into the gap.

"But your arm—!" Tom said.

"I'll—hold on—"

Torn between anxiety for his friend and the immediate urgency of escape, Tom paused for a split second. But another burst of fire sent him racing back to the pilot's seat, where he took over the controls. The pursuing jet was riding the freighter's tail!

Instantly Tom cut the motors and threw the plane into a yaw. The sudden braking effect which this maneuver produced forced the attacking jet to come up alongside the larger ship. In this position the enemy's guns could not be brought to bear on Tom.

Tom banked sharply toward the fighter plane until his right wingtip was directly underneath the left wing of the other plane. Then suddenly he flipped the right wing of the heavy cargo plane, to tip the tiny jet over on its side, and send it downward a crazy spin.

By the time the enemy pilot regained control, Tom had the throttle wide open and was streaking out of range. Then he put the ship on automatic pilot, turned on the radio, and hurried back to Bud.

He was stunned to see Bud's head hanging downward, his knees sagging toward the deck. The young pilot was in agonizing pain! As Bud fought bravely to retain consciousness—his eyes were closed and he was panting—Tom realized that his copilot might suffer a permanent arm injury.

From a block and tackle overhead he cut off a length of quarter-inch rope and tied his friend to a stanchion, so that when the door was released, Bud would not be sucked out. Tom pressed the lever which controlled the door, but discovered that it was not working. Bud must have tried to pull the door shut by hand the last few inches, and his arm had become caught.

Perspiration stood out on Tom's brow. He had to act fast! Tying himself also to the stanchion, Tom pushed with all his might against the door. It did not budge.

He released the air pressure and then switched the control lever to the open position. As a fresh surge of compressed air hit the piston, Tom smashed into the door with his shoulder. There was a sudden explosion of air and the door gave way with such suddenness that Tom was almost swung out through the opening at the end of his rope. He pulled Bud's arm in and managed to force the door shut as the youthful pilot sank to

the floor, trembling violently. Then Tom rushed back to the pilot's seat and took a quick look at the terrain.

Banking downward toward the river below, he could see he was approaching a city, which he immediately recognized as Montreal. Tom radioed for medical assistance, then made a neat landing on the river. An ambulance was waiting to take Bud off the moment the air freighter stopped.

"Easy!" Tom called to the medicos, and explained had happened to his friend, who now had lapsed into semiconsciousness.

They removed Bud at once to a hospital, Tom riding along in the ambulance, grasping his friend's hand. Bud's face was white as paper! While he waited at the hospital for news of his friend's condition, the young inventor contacted the police and gave them the story. They moved to impound the flying freighter, and assured Tom that they would investigate the Excelsior Oil Company plant at once and let Tom know the result.

Next Tom put in a call to Swift Enterprises. He spoke to Harlan Ames and reported the latest developments.

"Thank God you two are alive!" exclaimed the security chief. "We received a call from your contact in Hankton, Asa Pike, saying he'd seen your plane go down. He had binoculars and recognized the two of you. Of course we contacted the Heraklona, but they said they had watched the crew of a cabin cruiser pull you off. When they contacted the crew, they said they were taking you to a hospital up the coast."

"Did Asa Pike confirm the story?"

"He couldn't. When he saw the accident happen, he rushed off to get in touch with Enterprises." After Tom told Ames about Bud's condition, Ames added, "Suppose I send a plane up to bring the two of you back to Shopton."

"Do that."

Ames held the wire so that he might hear the report on Bud. A nurse came to tell Tom that his friend had regained consciousness and could be released from the hospital in a couple of hours. His arm, though momentarily swollen and discolored, had not been badly injured thanks to Tom's quick action. Tom relayed the good news to Ames, then hung up.

An hour later, while seated in a lounge waiting for Bud, Tom was amazed to see the boy walk in, a doctor behind him. Bud's right arm was in a sling.

"Golly, it's good to see you!" Tom exclaimed. "I thought we weren't going to be able to take that rocket trip after all."

"I'm going on that trip if I have to be carried into the rocket!" Bud rejoined, laughing.

"Only let's make sure all the doors are shut next time." Tom noticed a grimace of pain cross his friend's face as his sore arm brushed against the wall.

"You're lucky not to have lost it," the doctor said.

The boys were driven to the airport where they saw one of their fast Swift Enterprises jets just coming in. Arvid Hanson was piloting it. As soon as he learned that Bud's arm would be all right in a few days, Hanson remarked wryly, "I believe you fellows would be as safe up in space as you are on this planet."

Tom laughed. "Maybe safer!"

When they arrived at Enterprises an hour later, Harlan Ames hurried over to meet them. "Any word from the Canadian police yet?" Tom asked.

"No word yet," Ames replied.

"Bud," Tom added as his friend yawned loudly, "you'd better get some shut-eye. In case you haven't noticed, it's night."

"How about you? A tough day for you too."

"Oh, I'll come along," Tom promised. "I want to think over a few things before I turn in."

"Okay, night owl." Bud winked at Hanson. "Watch out for a new invention by morning. But be sure to call me if Tom decides to beat his Dad and take off in the rocket. I think he's trying to shake me!" He was driven away in a jeep by Hanson, while Tom went to his office to be on alert for news from Canada. Weariness finally overcame him and he lay down on a couch, and was asleep in moments.

But at daybreak Tom was awakened by a call from George Dilling, head of the plant's public communications office. "We have a report you'll never believe!" he began. "The Canadian police arrived at the oil company facility an hour after they got your call."

"And captured the whole gang," Tom broke in.

"Captured nobody. The place is a ghost town!"

"What!" Tom burst out incredulously. "But it looked like they were putting together a whole rocket-launching setup!"

"I think they had an unexpected, and unwanted, change of plans," said Dilling. "The police said there were signs of a massive explosion and fire—twisted metal everywhere. It's so far out in the woods that nobody was likely to hear it, if the fires were extinguished quickly."

"I see," said Tom. "Did they collect any useful evidence?"

"Nothing to speak of, it seems. There were signs that everything was trucked away about six weeks ago. By the way, the police also found that place by the lake where you two were held. It had already been stripped clean of evidence."

"Who owned the property?"

"It was part of the estate of a man who passed away last year. It's been in legal limbo since then. The lawyers say no one was authorized to be using it."

After hanging up, Tom's thoughts were racing furiously. Something was being shipped from somewhere to the dock at the lake. But what? And what was its destination?

Later that morning Tom breakfasted at home with Bud and Tom's mother and sister. He ate almost silently, his thoughts focused on his adversaries and their plot against Swift Enterprises.

"Hey Skipper, look!" Bud called. He lifted his right arm in its sling and wiggled his black-and-blue fingers. "Not bad, huh?"

Tom nodded with a smile, and Mrs. Swift said, "Oh, Bud, it must hurt terribly!"

"It's not so bad," Bud replied. "I just won't be thumbing for a ride for a while!"

"Tom, you look like you're already somewhere off in space," Sandy commented. "This

rocket project is really getting to you."

Tom looked at his sister and gave forth a sigh. "I guess you could say I've got a lot on my mind. At this point in a project—or an adventure—we usually have at least a vague idea of who and what we're up against. But not this time."

"I thought it was that billionaire, the one with the yacht," declared Mrs. Swift, a concerned expression on her face.

"Oh, he's too obvious!" said Sandy dismissively, which brought a grin to Tom's face.

"I'll admit he's not our most unsuspected suspect," was Tom's rejoinder, "but he does seem to be linked to a lot of the things that have happened—and he sure has enough money to finance the building of a rocket ship."

"Maybe he wants to see Greece win the competition," Bud put in.

"Greece hasn't announced a desire to participate," replied Tom; "and they're not part of the European consortium that's building a craft in Spain and launching from Morocco. Besides, if the government were making an official entry, why wouldn't they announce it publicly?"

"Why wouldn't anyone announce it publicly?" Mrs. Swift declared. "It's an open, public competition."

"Now let's be logical," said Sandy. "If they don't want anyone to know they're in the race, it must be because they have something to hide. Tom, maybe they've stolen your fuel kicker invention!"

"More likely Dad's engine design," Tom replied. "By the way, has Dad called lately?"

"Last evening," responded Tom's mother. "That's when I was able to tell him that you two boys were all right. He was so relieved, Tom! His own project is going well, it seems."

"The CosmoSoar launches on Monday, and I'm determined to be there," declared the young inventor. "Bud, what say we take the Sky Queen back down to Fearing this afternoon?"

"I'm up for it," Bud replied, "arm and all!"

"That's what I figured, flyboy."

Later in the day, as Bud met up with Tom in the Flying Lab's mammoth underground hangar, he noticed a large object being loaded aboard the stratoship. "What's that, Skipper? A new invention?"

Tom shook his head. "No, just a slight improvement on an old one. It's a new version of the robot drones that carry the landing forcer device. I might as well continue testing it on the island."

With a small crew that included Arv Hanson, Tom and Bud lifted off from Shopton at 2:15, and fifty minutes later were crossing the South Carolina coastline, heading out to sea.

"Tom—incoming message," the communications operator called out from his console next to Tom and Bud on the ship's command deck.

Maybe it's news of those rocket men, Tom thought excitedly, giving Bud a meaningful glance.

But the summons was for a completely different reason. "Sterling is calling," Phil Radnor radioed from Fearing Island. "He's in trouble over the ocean. A strange jet is trying to force him down! They're in a dogfight right now!"

"Did you get his position?" Tom cried.

"Yes—only two hundred miles southwest of here!"

"I'll change course to help him!" Tom announced.

Without explaining further, Tom flipped on the loud-speaker and began to bark orders to the crew.

Tom gave Arvid Hanson instructions on what he was to do with the new robot drone that had been loaded on board. "Be ready in a minute!" he replied in response to Tom's direction. Then Hanson took up a position on the lower deck beside the drone's remote-control unit, which was being shipped to Fearing Island along with the drone. In a few minutes he intercommed his readiness to Tom and Bud on the control deck.

Only ten minutes had lapsed since the call for help had come!

The mighty Sky Queen lunged upward in a fiery blast, streaking along through the sky on its way to intercept Sterling's attacker. Tom now contacted Hank directly and learned that the fight was still on.

One minute more and the Flying Lab had arrived at the scene, hovering in the stratosphere on its jet lifters. Far below, two small black dots were maneuvering wildly above the backdrop of the sea. The Sky Queen bore down toward them.

"Okay, Arv!" Tom called on the intercom. "Go to work on him! Come up behind with the robot!"

The aerial hangar door opened and Tom saw the released dummy plane shoot downward. Skillfully Hanson beeped the drone toward its mark.

"You're directly on the guy's tail!" Tom commed down. "Veer him off to the right a couple of degrees! Get him away from Hank!"

"Roger!" Hanson responded. Tom watched tensely as Hank's attacker, now desperate, made a sudden maniacal attempt to execute a pass at the other plane. "He must have felt the forcer," Hanson reported. "I made contact for a moment, then lost him."

"Try again," Tom urged. "And this time, use the breakaways."

The enemy pilot was trying to come in from the right side. As he completed his turn for the new approach angle, a half-dozen small winged objects, each about the size of a heavy-duty flashlight, tore away from the drone and splayed out in all directions.

"What are they, Skipper?" asked Bud.

"Remote antennas for the landing forcer," Tom explained. "They can be maneuvered independently up to a mile from the main unit."

With the array of antennas now surrounding the rogue craft, the powerful landing forcer caught the jet in its electronic grip and rolled it violently away. Hank's jet streaked ahead, unmolested.

"We've got him now!" Arv Hanson cried excitedly into the intercom phone. "Are you going to dunk him here, in the ocean?"

"No. We'll force him down at Fearing Island."



As the strange quartet of aircraft headed for the ocean rocket base, Hank Sterling radioed Tom.

"Many thanks, Tom!" he said, his breath heaving from the tension of the dogfight. "That robot's mighty sweet. Why, it picked that plane off its course like an ace skeet shooter." Tom was delighted himself with the performance of his pilotless jet robot. "Did you have a rough time with that fellow?" he asked.

"He almost got me. I thought I could outfly him but couldn't. Have you any idea who he is?"

"Obviously part of a gang that's trying to wreck the rocket project," Tom replied.

"Good thing you arrived!" Hank continued. "This secret unit I'm delivering might never have gotten to your base."

"Is it okay?"

"Yes!"

"Well, you go ahead with it and land first," Tom advised, as the huge CosmoSoar on Fearing Island poked into view on the horizon.

"Maybe we'll finally learn something from this guy," Tom mused to Bud as they flew across the stretch of water to Fearing Island and circled for a landing.

"Hope so," responded Bud. "Harlan Ames said the one you caught, Mummy Man, has clammed up pretty tight."

The strange convoy glided past the guarding robots toward the airstrip. Hank Sterling had already taxied to the hangar.

Tom cut in the Queen's forward jets and hovered to allow the robot and its captured prey to go in first. After they had reached the field, Tom lowered the Flying Lab.

As he approached the airstrip, the young inventor's pulse quickened. What clue to the enemy's identity would this latest captive reveal?

## CHAPTER 11

### AN EERIE INFORMANT

AS THE jetcraft and the drone landed, mechanics and security personnel rushed the Fearing Island airfield and surrounded the enemy plane. While one group taxied the

robot jet to a hangar, the other men stood by awaiting orders.

In the Sky Queen Tom dashed down the steps past the first deck, where Hanson was coming from his air-tight cubicle next to the hangar.

"Great job! You handled the beeper like a vet," Tom grinned. With Bud at their heels, Tom and Arv ran over to the mystery plane where Phil Radnor joined them, an i-gun in his hand. They forced open the cockpit door with the help of two of the mechanics. Inside the pilot sat in stony silence. He was black-mustached and seemed very young, perhaps no more than twenty years of age.

"What's your name?" Tom demanded.

The answer was a glare of hate.

"I'll look for identification," Hanson spoke up, and as soon as the pilot had climbed out of the plane, hands raised, he went through the man's pockets. But there was nothing to be found there.

"There may be something in his plane," Tom suggested. "Phil, maybe you should escort our visitor to the hangar office."

While Radnor and several others accompanied the prisoner, Tom, Bud, and Hanson climbed into the jet to make a thorough search. Ten minutes later they were about to admit defeat on every count except fingerprints when Tom cried:

"Wait! Just a minute!"

The jet's fuselage was built of an aluminum sheathing over a laminated plywood shell. Upon investigation, Tom had noticed that a black line of trimming ran along the wall near the floor of the cockpit. As Tom inched his fingers over the area his nails suddenly caught on the trim. Over it was a thin strip of tape which he quickly tore off.

"Here's something!" he exclaimed, as his right forefinger touched the edge of a flat parchment packet tucked in between the inside wood and the metal hull. Tom snatched it out.

The pouch held three items: two air charts with routes marked in red ink and a hastily scribbled note. It seemed to be written in some foreign language, but the last word, placed as if it were a signature, fairly jumped off the page at Tom. It was Rotzog.

"The name of the enemy!" Bud exclaimed.

Elated by his find and sensing its top-secret nature, Tom thrust the pouch into his inner pocket. He and his two companions hurried to the young inventor's office where Tom spread out the three papers on a desk. Starting with the charts, which appeared to be hand-drawn, they noted that one traced a route connecting Fearing Island to the abandoned rocket base in Canada—the Excelsior Oil Company site.

"This links our visitor with the spies all right!" Tom declared.

He picked up the other map and whistled.

"Look at this!" he cried. "This course runs the great circle from that place by the lake all the way to the Bering Sea!"

Three pairs of eyes followed the red line that tracked north of Quebec, across Hudson Bay and Great Bear Lake, past the Yukon and far out over the Bering Sea. It ended at what appeared to be an infinitesimally small island, charted but nameless, in the

Aleutian chain. Unfortunately the map was too crudely drawn to supply an exact location.

"That might be their new rocket base!" Arv Hanson cried. Flushed with excitement, Tom added: "Now we're getting somewhere! I'm jetting up there to try to find it!"

Exchanging a concerned glance with Arv, Bud laid a hand on Tom's shoulder. "If you'll consider some friendly advice from a sub-genius," he said, "you'll stay here and get your own rocket into space. Let the police handle the bad guys, Tom."

"You're right," Tom admitted, "and we don't have any time to waste. But you and I both have something personal to settle with that bunch."

"Remember this," said Hanson. "The rocket project of our rivals may be on the level even if it's secret. The crimes of the group that have been bothering you may be instigated by the national backers and not known to the scientists who are building the rocket."

"That's good logic," conceded Tom, frowning, as he turned his attention to the note.

"I'm sure I've seen that language before," Tom finally decided. "It looks a little like Russian or Serbian, don't you think?"

Bud nodded, saying, "That name, Rotzog, fits that part of the world."

The young scientist walked to the videophone, flicked on the New York circuit, and got Rick Dalton, the northeast telecaster of Swift Enterprises private telecommunications network. Holding the paper up before the camera, Tom asked him to record the image from his screen and transmit it at once to the local FBI office to have it translated.

"No need for that, Tom," Dalton replied. "I can read it myself!"

Tom laughed in pleased amazement. "That's wonderful! What language is it in?"

"Serbo-Brungarian."

Tom, Bud, and Hanson exchanged wide-eyed glances. Brungaria! After decades as a police state in the shadows of the Soviet Union, the tiny Central European nation had overthrown its masters and established a tenuous democratic government which had now been in power for more than a dozen years.

"So what does it say, Rick?" Bud demanded.

"You won't like it," responded the telecaster. "It's along the lines of 'Intercept all trips of Swift rocket men. Avoid launch island. Meet at—' Here's a word I don't know, C A R P. The note goes on, '—on fourteenth next for further orders.' Then there's a name—"

"We've got the name," Tom interrupted. "Have you ever heard of this 'Rotzog,' Rick?"

"No, but then I have no particular interest in Brungaria. I just studied the language in college."

"Thanks for your help, though."

Tom next telephoned Harlan Ames at Enterprises, putting the telephone on speaker. He recounted the events of the afternoon to the security chief, and read him the translated message.

"I've already received a report on the dogfight jet from Phil," said Ames, "and I've run the prints on your captive—they're not on file in any database we have access to, but I've passed them on to our liaison in the FBI. As for 'Rotzog'..."

"Ring any bells, Harlan?" Tom asked eagerly.

"I'm surprised you haven't heard of him, Tom," replied Ames; "although he was a bit before your time."

"A Brungarian?"

"Sure was," Ames continued. "About fifteen years ago, the former government announced their Brogramna Seleneki with great fanfare. This was their big project to become the world's second nation to land men on the moon."

"Yes, I've read about it!" said Tom. "They launched a number of automated probes into lunar orbit, but abandoned the program before trying a manned flight."

"Well, for years there was a rumor in intelligence circles that they had launched a manned flight. According to the rumor, the last of their 'automated probes' actually carried a four-man crew, who landed on the lunar farside in a descent module. The story goes that the landing was a success, but the module blew up when it tried to lift off again. The government held the project's chief engineer accountable for the catastrophe, and he was executed by firing squad. His name—and this part is confirmed—was Korvant Rotzog!"

Tom and his friends were thunderstruck. "His execution must have been a cover story!"

"Possibly so," Ames commented. "Perhaps he escaped his fate and is now working for some other group."

Bud Barclay now broke in. "Maybe someone is just using that name as an alias."

"We don't know anything yet," concluded Ames. After some further conversation and speculation, the call to Enterprises was terminated and Tom, Bud, and Arv Hanson went their separate ways, Bud to rest under doctor's orders, Hanson to oversee the unloading of the Sky Queen.

Tom had the equipment from Shopton, and from Hank's jet flight, moved to his laboratory. If after a thorough test he felt that his new invention, which he called an exodeterminor, was superior to the ruined positioning system aboard the Star Spear, he would make the switch.

For two hours the young inventor busied himself with delicately calibrating the intricate equipment, one key part of which had been ferried from Houston by Hank.

Reaching a stopping point and beginning to feel a need for rest and dinner, Tom broke off work.

But first I'd better write it up in my daily journal, Tom told himself. He sat down before the monitor screen, underwent the identity scan, and accessed the most recent page of the journal. He was about to commence typing when he absent-mindedly took notice of a word at the end of the preceding entry. The word was ROTZOG!

Tom reacted with shocked confusion. The sophisticated security system prevented anyone but Tom and his father from accessing the file, and Tom hadn't yet had a chance to speak to his father about the note found on the jet. But here, unaccountably, was the name of their enemy!

Even as Tom thought this, the word appeared a second time, just below the first.

ROTZOG

ROTZOG

I must be losing it! came Tom's accusing thoughts. Maybe I'm writing it myself without realizing!

But now came a new entry.

ASK YOUR QUESTIONS TOM

This is impossible, he thought. But with trembling fingers he typed out a brief sentence, which appeared on the screen.

"Who are you?"

A response appeared almost immediately.

CANT SAY

"How did you access my journal file?"

YOUR TAX DOLLARS AT WORK

This surprising response gave Tom a theory. "Are you FBI? CIA?"

THATS CLOSE ENOUGH

The mystery informant then added:

THIS IS AUTHORIZED BUT DENIABLE

Tom knew that "deniability" meant that the communicator was able to provide information, but only in such a way as to be able to deny that he had done so if the information were publicized.

"Can we meet?" typed Tom.

NOPE

"Tell me about Rotzog."

SPRUNG FROM PRISON BY WESTERN AGENTS BEFORE EXECUTION DE-BRIEFED IN FRANCE LUNAR BLOWUP CONFIRMED BUT HE DENIES RESPONSIBILITY GIVEN NEW IDENTITY DIS-APPEARED RECENTLY AFTER ATTEMPT ON HIS LIFE

After waiting a minute for the cursor to resume moving, Tom typed, "Is he behind our problems?"

SUSPECTED MAYBE INVOLVED WITH NAUGHTY GROUP CALLED SZENTIMENTLYA MEANS SENTIMENTALISTS WORKING TO UNDERMINE CURRENT BRUNGARIAN DEMOCRATIC GOVERNMENT AND BRING BACK OLD SYSTEM DANGEROUS BAD GUYS ALL WE CAN TELL YOU

Tom considered what had been said, and realized that the communicator seemed to be aware of the content of Tom's conversations with Rick Dalton and Harlan Ames. He then asked: "Have you bugged our communications links?"

The answer was to say again:

YOUR TAX DOLLARS AT WORK

"Thanks," typed Tom.

YOUR TAX DOLLARS AT WORK

Tom waited to see if further communications were forthcoming, but the screen remained unchanged for several minutes. Then, abruptly, everything written by Tom or the informant was blanked out, leaving the screen empty!

"Good night," Tom murmured aloud. "Was it all a dream?"  
He jerked back in his chair as a single word appeared on the screen:  
NOPE

## CHAPTER 12

### MYSTERY UPON MYSTERY

"WE'VE BEEN OVER your lab a full dozen times, Tom. If there's a bugging device hidden there, I don't know how to find it."

The speaker was Phil Radnor. It was three hours later, as Tom, Phil, Bud, and Damon Swift sat in the small dining room near Tom's private living quarters, finishing a light dinner that Chow had prepared.

"Perhaps we should be pleased at the effectiveness of our government's spy apparatus," commented Mr. Swift. "After all, it served a useful purpose in this case."

"I don't buy it," said Bud. "How do we know it is from a government agency? You could get conversation just as good from a ouija board!"

Radnor pointed out, "We have no way to verify it. It could be disinformation from our enemies—even a hostile government."

Tom contemplated his knife. "If it is bogus, then they took a calculated risk by making a reference to 'Rotzog.' For all they knew, we might not have found that hidden packet in the plane yet."

"I'm afraid I disagree with your reasoning, son," said Mr. Swift after a moment of hesitation. "You're forgetting that you already talked about Rotzog over what we must now assume is a bugged communications line."

"That's true," Tom conceded.

"And consider this, guys," added Radnor. "It might be that they arranged the whole air attack because they wanted us to find the Brungarian note—in order to mislead us into suspecting a foreign connection."

"Oh, man!" Bud leaned his chair back on its legs, gazing up at the ceiling in frustration. "This is like a jigsaw puzzle that just gets bigger each time you find a piece!"

They finished the meal in silence, each absorbed in his own thoughts. Over dessert Tom

asked his father about the unmanned launch of the CosmoSoar, now only two days away. "Things are proceeding normally," the elder Swift replied. "As it turns out, the ship sustained no structural damage when it tried to mimic the leaning tower of Pisa. It was a bit of good fortune."

"Very," said Tom. Bud couldn't help noticing a trace of a frown on Tom's face. He's really into this rivalry thing with his Dad, Bud thought.

As the four rose from the table, Phil Radnor remarked, "Off to solve our mysteries. How many are there? There's that mystery engineer who snuck aboard your rocket, Tom; the one who called himself Eskol. Not a trace anywhere. Then there's our mystery mummy, Arthur Gray, who's in temporary federal custody and refuses to talk. And now a mystery informant who makes cryptic revelations by computer!"

"And a mystery island that might be named Carp," put in Mr. Swift.

"And don't forget that hotshot jetster who tried to force down Hank," added Bud.

"Yes," said Tom. "What will you be doing with him? Has he said anything?"

"Not one word," Radnor responded. "We've got him under lock and key for the night—well-guarded, by the way. Tomorrow morning the Feds will be flying him to the mainland."

"Well, maybe he'll decide to tell us something between now and then," Tom said.

Bud noticed that his pal give him a sly wink, which he refused to explain. Instead, Tom smiled as the others walked away. "Just trying to think up something," he remarked.

"What you need, Bud, is action. How about a little trip tomorrow in the Sky Queen?" The young pilot's eyes glowed in anticipation. "Where? Carp?"

"No, straight up. We still have to test my combination cosmic-ray altimeter and stellar sextant in the air."

"The exodeterminor?" Bud Barclay knew that this invention of Tom's, with which the rocket pilot could know at all times his orbital navigational position, ranked second only to the fuel kicker in importance.

"Right," Tom replied. "While falling around the earth in orbit it'd be mighty handy to know exactly where we are."

"I'll say," Bud replied. "If I get lost in space and never can fly back to this earth, it might help to know what stars I'm kicking around with."

Tom gave his copilot a friendly jab and they arranged to meet at breakfast.

The next morning dawned early and pale, with a hint of mist in the cool Atlantic air. Up early for some unstated reason, Tom was already waiting at the breakfast table when Bud sauntered in, yawning, his arm now free of its sling. They chatted as the minutes passed, then Tom took a look in the kitchen. To his surprise, it was untended. Further investigation disclosed that Chow was not at the cottage at all and no preparations had been made for the morning meal.

"Where do you suppose he is?" Tom asked. "It's not like our cowpoke to be late on the range."

Suddenly Bud grinned. "I think I know. Come on!"

He led the way toward a cove in the island's coast line. "I'll bet Chow's talking to his

electric eels."

Tom laughed. While on a trip to South America the Texan had caught two of the strange eels which shock their prey into insensibility. Chow had decided that hereafter he would use them to do his fishing for him. Accordingly, he had brought the electric eels to Fearing Island and constructed a weir for them in the cove near the rocket facility. The fence was strong and had held well, but up to the moment no large fish had accepted the invitation to enter and be shocked. Chow, still hopeful, visited his project at every low tide, no matter what time of day or night it occurred.

They spied the chef about fifty yards off shore in water up to his middle. He looked very unhappy as he waded toward the shore.

"What happened?" Bud cried. "Fish bite you?"

"Shucks, no!" Chow called back. "Ain't no fish here!"

"No fish!"

"Even lost my eels!" Chow added mournfully.

"Where's your boat?" Tom asked, knowing that the Texan always went out in a rowboat.

"Lost my oars an' I fell out o' the dang-busted boat tryin' to grab my eels. Then the boat got took in a current an' off she goes!"

Chow trudged onto the beach. Quarts of sea water sloshed from his clothing and shoes with each disgusted step. The boys howled with laughter.

"Well, brand my sea lights!" Chow said. "I'd-a thought you fellas would be sorry not to have a good electric-fried fish dinner!" Reaching the house, he heaved a great sigh. "I'm 'fraid my menu for today is ruined," he lamented.

After the disappointed cook had changed into dry clothing, he prepared a quick but hearty breakfast.

Though the boys praised his skill, Chow was glum. He asked if Tom was going to South America soon and if he would bring him some more electric eels.

"Afraid not," Tom replied. "But if you want anything from a hundred thousand feet off the earth, I might oblige you. Bud and I are taking off right away for a little experiment."

"Y'mean a exper'ment with those folks from another planet?" Chow asked eagerly.

"You got that lil ole gadget back t'gether again so's you kin talk to 'em?"

Tom told him that the "gadget" was being repaired and would soon be in shape to not only receive radioed mathematical symbols from space, but also to transmit a lengthy message to the space beings.

"A message about what?" Chow asked. "More'n what you told me about?"

"Technical info about our world," Tom replied. "It's clear that the only reason these people haven't visited us directly is because they don't know how to penetrate our atmosphere and survive in our surface environment."

"What's the matter with 'em?" Chow asked. "There's plenty o' places with real nice weather all year round—like Texas!"

"I think they may have very light, fragile bodies," Tom said, "and be highly paramagnetic."

"What's that?" the cook demanded. "See here, Tom Swift, you ought to talk English t'me



at least as good as I talk it to you!"

Both boys laughed, and Tom explained. "Some of the symbols make me think that the space beings may be affected by the force of the earth's magnetic field. It might paralyze their nervous systems."

"Then they sure better stay off o' this ole magnetic planet," Chow declared. "We kin git along without 'em anyhow." But suddenly the Texan grinned. "How-some-ever, if you see any o' these queer space folks, give 'em my regards. That's jest western hospitality!" Chow turned and went into the kitchen. As the boys were finishing their breakfast, Tom suddenly snapped his fingers.

"I know how to solve part of the puzzle!" he said excitedly.

Bud exclaimed, "You mean you've figured out who has it in for you and your rocket?"

"No—the puzzle about our space friends!" responded the young inventor. "I'll send them an explanation of how to build a degaussing shield to protect their bodies."

"Good idea," Bud said wryly. "But how could you ever do that with geometric figures?"

"It'll be a lot of work, but I'll do it some day," Tom declared. Then, talking more to himself than to Bud, he said, "I might use an arc to represent the shield—"

At this moment the facility's loud-speaker system boomed out the message that the federal transport from the mainland was now arriving at the airstrip. The boys could hear the whup-whup of helicopter blades.

"Right on time," commented Tom. "Shall we see our silent guest off?"

They strode out into the open air. In the distance, a small chopper, marked with the American flag, was settling down on the concrete helicopter pad. Between the boys and the craft, parked in front of a hangar, was the jet the prisoner had commanded in his attack on Hank Sterling.

"And here he comes," Bud muttered. Phil Radnor and a member of the island security force were leading the sullen, handcuffed prisoner out of the building containing Radnor's office. The small group paused not far from Tom and Bud.

Tom approached casually, hands in his pockets. "Sorry to see you leave so soon," he said to the man. "Last chance to get something off your chest." But the man only glared at Tom.

Whew! Bud thought. If looks could bite—!

The captive pilot glanced away, toward the waiting helicopter. Then he flinched back in shock as an explosion of light scattered black shadows in every direction and a powerful retort boomed across the airstrip!

## DANGEROUS ACID

"GREAT JETSTREAMS!" cried Bud Barclay in bug-eyed disbelief. "It's the attack jet!" The grounded aircraft was enveloped in flame, thick smoke pouring from her tail! Tom took a few steps forward, then whirled in rage to face the slack-jawed prisoner. "So that's it! It wasn't enough to force Sterling down—you planned all along to destroy as much of the rocket complex as possible! What was the plan, to make a suicide dive at the rocket ship?"

Now, for the first time, the rogue pilot spoke. "No, no!" he gasped. "Not my orders, no!" His husky voice bore a thick accent.

Radnor gave him a contemptuous shove. "To all the other charges, we'll add terrorism against a federally secured facility!"

The man's eyes darted about wildly. "No, it's wrong! I know nothing about—"

"It's your jet, pal!" Bud charged, balling his hands into fists.

"He must be packing a remote-control device," Radnor declared. "We'll have to search him more thoroughly before he gets on the chopper!"

"No!" cried the pilot. "Don't you see? It wasn't meant for you, it was meant for me!"

"What do you mean?" demanded Tom skeptically.

"I would have been in the air now, not yet at the base," the man continued, his face white. "If I had succeeded in my mission, I would first go to refuel, then sleep, then fly to the island. A timing bomb, you see?—to get rid of me, for knowing too much!"

"You mean Rotzog would murder one of his own men?" Tom asked.

"Yes, yes!" shouted the young pilot in frantic tones. "Rotzog is a madman! I should never have trusted—"

Abruptly he stopped, seeming to choke on his words. He flashed Tom a glare of hate.

"Uh-oh," said Phil Radnor. "Guess the cork is back in the bottle."

"Well," Tom said in a suave tone of voice, "at least we know now that Rotzog's the man in charge. Much obliged—Paolo!"

The prisoner gave Tom a startled look. "How do you know my—"

Tom smiled a bland smile. "I didn't. But now I do." He gave Phil Radnor a nod. "Go ahead, Phil. The federal marshals are probably getting antsy."

As Radnor and his assistant led their prisoner off toward the waiting helicopter, Tom turned away and faced Bud, who was frowning as he gazed at the fiery jetcraft. "Tom, shouldn't the emergency squad be doing something about that plane?"

Tom shook his head. "No, flyboy. I told them not to."

"You did? You mean just now, by televoc?"

"Nope. Before breakfast."

A furrow of incredulity seemed to spread from Bud's brow to the rest of his face. "You mean you knew about the bomb?"

"I should," Tom replied. He withdrew his right hand from his pocket. He held a tiny, square device in his palm. "I installed the fireworks myself, by dawn's early light. A little packet that makes a great big boom and a shower of sparks, plus the same kind of smoke-maker we used on the T-Bird. Just needed to push my little button here."

"But the fire—!"

"No fire, pal, just a very cool reaction by the chemicals I sprayed over the fuselage this morning. It's about as hot as a sunburn."

Bud managed a sigh that grew into a chuckle. "Should've known. It's not enough that you've got physics, aeronautics, and electronics down pat. You're also a master of psychology!" Suddenly Bud frowned. "So why didn't you tell me?"

Tom squeezed his friend's shoulder. "Bud, you're a pilot, not an actor. I was afraid Phil and I might come off a little contrived, but I knew you would give a great performance—if you didn't know it was a gag!"

Bud grinned. "Good thinking!" he conceded. "And now we know about Rotzog. But how did you know the guy's name was Paolo?"

"It was a guess," Tom responded. "I remembered Asa Pike mentioning a young man called something like 'poll-oh'."

"But what if your guess had been wrong?"

"Then," said Tom Swift, "I would have been embarrassed!"

Returning to the cottage, Tom called up the head of the technical crew that had been preparing the Sky Queen for the test of his exodeterminor device. He was pleased to learn that the installation had been completed and the giant skyship was ready for flight. Tom, Bud, Arv Hanson, and Hank Sterling proceeded aboard.

Taking the pilot's position in the spacious control compartment, Tom cut in the jet lifters. The ground vibrated as the sleek silver craft ascended vertically from the runway. Surging upward at breathtaking speed, it pierced the early morning haze and faded from the sight of those on Fearing Island below.

"This is one way to cut your Dad's CosmoSoar down to size," Bud commented, gazing down through the curving viewport. "From up here it looks like a BB."

"Sure; but you can't see the Star Spear at all," was Tom's rueful comeback.

When the altimeter needle read ten thousand feet, Tom phased in the forward thrust jets and the Flying Lab arrowed into a graceful arcing climb. Putting the plane on autopilot, Tom invited the others aft to one of the laboratory cubicles to inspect the instrument he had invented. As they entered, he said:

"This navigational equipment is designed only for the near-earth distances that we expect to reach in our first flights. When we really get out into solar space we'll depend on a different technology."

"On Bud's behalf, I'll ask: how does this invention differ from the ordinary old altimeter that we use now?" Hank Sterling inquired, teasingly.

"An altimeter which depends on measuring atmospheric pressure won't work at the very

low pressures of the extreme upper atmosphere, the region called the exosphere, much less in the vacuum of space," Tom replied. "This instrument measures the direction of so-called cosmic rays from the sun."

"I do know a few things," said Bud, "being the best friend of a scientific genius. The alpha particles are hydrogen nucleuses—I mean nuclei—and the beta particles are left-over electrons. So have you got some sort of high-tech catcher's mitt outside the hull to trap these things?"

"No," Tom answered. "Think of it as a sort of hypersensitive radar system that tells the machine's internal computer where the particles are, and where they're headed."

Arv Hanson spoke up. "How accurate is it?"

"To within a few feet. Frankly, this part of the instrument is not my own brain child. The idea has been kicking around for some time."

"You dreamed up the navigation part of it?" Bud asked.

"Yes," Tom answered. "I took the principle of solar radiation and applied it to the stars. This instrument in the black case picks up the waves from three stars and coordinates the data with the angle to the sun. The rocket's position is recorded on the dial—instantly."

"Let's see it work," Hank Sterling urged.

Tom flicked the toggle switch. A whirring sound began and the needle on the dial moved instantly to seventy-eight thousand feet. Another switch was snapped and five dots appeared on the upper dial.

"The black one at the bottom is the earth," Tom explained. "The three red ones are stars."

"The small one must be the fix—the position," Hanson said.

"That's it," Tom replied. "The point of intersection of the lines from the three stars."

"How do you know which stars are showing on your screen?"

"Each first-magnitude star has its own distinct frequency-signature, which we can represent as sound if we want to," Tom explained. "Listen."

He changed the settings on the device. Three slightly different tones were now audible. From a chart Tom identified them as the stars Deneb, Vega, and Altair.

"Pretty cool," Hank Sterling commented.

"The music of the spheres!" Bud cried. "And nicely in tune, too. Tom, have you given it a name yet? Exodeterminor sounds a little too much like exterminator."

Tom laughed. "I have a harder job naming some of these things than I do figuring them out. Have you any ideas?"

"How about calling it the Spacelane Brain?" Arvid Hanson suggested.

"That sounds like a good name for either the invention or the inventor," Bud spoke up.

"What do you think, Tom?"

"The Spacelane Brain it is," the inventor answered.

He turned back to his instruments and entered several readings in the test log. Without looking up, Tom asked the others if they had noticed the altimeter reading.

"Better than eighty thousand feet," Hanson exclaimed. "You know, this is closer to Heaven than I've ever been!"

"And maybe as close as you'll get, eh?" Hank needed.

Tom grinned and said, "Let's start down."

The foursome went back to the pilot's compartment. They had just seated themselves when the Sky Queen trembled slightly.

Bud groaned. "I'm afraid to ask what that was!"

"The shock seemed to come from aft," Tom said, "and not outside. Do you two want to come with me while I investigate?" He looked at Sterling and Hanson. "Bud, keep her on the same heading," he directed his friend.

"Check," Bud replied. "And Skipper?—stay clear of open hatches!"

After checking the instrument panels and seeing that all the jets were okay, the young scientist and his friends retraced their steps aft.

"We'll look in the lab," he said. "The trouble might have originated there."

Tom slid back the sturdy double-doors of the soundproofed laboratory section. A cloud of sickening fumes poured out into the passageway. Tom recognized them at once.

"Hydrofluoric acid!" he cried. "I'll get gas masks!"

The acrid fumes were already burning the tissue in his throat as he slid the doors shut and ran, coughing, to get the masks from the emergency locker in the corridor.

Someone must have loosened the acid containers, he said to himself as he pulled out the masks. It never could have spilled by itself!

Running back to the lab section, Tom handed two masks to his friends and quickly adjusted his own.

"Come on!" he urged. "If we don't neutralize that stuff, it'll eat a hole right through the inner hull! And if we depressurize at this height, we're finished!"

## CHAPTER 14

### THE UNSTOPPABLE COUNTDOWN

AS TOM RUSHED into the laboratory with Sterling and Hanson, he saw that a large quantity of fuming acid had already eaten ragged holes along the seam where the inner hull met the deck. A quick glance disclosed that it had penetrated to the lower level of

the ship. By now it could very well have begun to eat away at the sealant between the fuselage plates!

"Tom!" Hank Sterling cried. He tossed Tom a package of slaked lime, handing another to Hanson and keeping one for himself.

"Sprinkle this around wherever you see the acid!" Tom shouted through his mask. "I'll go down to the hangar deck!"

One thing was sure: the Sky Queen must get back to a livable altitude as soon as possible! Rushing to the intercom at the bottom of the inter-deck stairway, he cried:

"Bud, dive for the island as fast as you dare!"

Without asking why, Bud obeyed instantly. Sensing from his best friend's voice that the lives of the stratoship's occupants depended on his skill, the young pilot's hands flew over the controls and the Sky Queen lunged downward like a silver meteorite.

From the tightness in his stomach and the weightless feeling in his arms, they must be moving about as fast as anyone had ever flown, Tom thought as the diving speed accelerated. Even the ship's audiogyrex system was unable to suppress the sensation.

It was only a matter of minutes before Bud was using the Flying Lab's jet lifters to slow its downward flight, expertly bringing it to a hovering stop only a few score feet above the Fearing Island airstrip. But in that brief time, Tom, Arv, and Hank had managed to arrest the spread of the acid and neutralize its deadly activity.

"A close one!" panted Hank Sterling as the three joined Bud on the command deck.

They gave Bud a quick account of the emergency as he brought the craft in for a smooth touchdown.

"More sabotage!" muttered Bud grimly. A glance at Tom's face told Bud that his friend agreed completely.

Tom and Bud went to Phil Radnor's office immediately to make a report. After they had concluded, Radnor said:

"Now I have a report for you."

"You must have received news," Tom observed.

"We sure have," he replied. "That first spy you caught, Arthur Gray, made a full confession to the FBI. Well—almost full, anyway!"

"That's great!" Bud cried.

"It was the arrest of his confederate Paolo Melikrides that set him off," explained the security chief.

Tom could hardly believe it. "He squealed on Rotzog?"

"That's right," answered Radnor. "And it sounds like your mystery informant was right on the money. Rotzog's 'life after death' has apparently consisted in secretly continuing his work on experimental rocket design. Gray says he's obsessed with proving that the moon-landing disaster wasn't his fault, that he's too much a super-genius to have made a mistake. So he's determined to win the EARL competition himself. And it seems he has a pile of money."

"Money from where?" Tom asked. "From that Brungarian faction?"

"Nobody but Rotzog knows where it comes from, and it's always in cash. He pays his

men well."

"To spy and steal inventions?" Tom asked.

"That and much more. According to Gray Rotzog claims he's going to rule the world from a space platform he's building."

Bud rolled his eyes. "I've already seen that movie!"

Radnor smiled. "I'm not saying I believe it, or that Rotzog believes it. But that's what he puts out to his hirelings."

"Sounds like a great motivator," Tom remarked. He asked if the FBI had moved to catch Rotzog, and was disappointed to learn that Gray insisted he did not know where Rotzog was, nor the location of his rocket base. Gray had received all his orders from the man named Goff and had never seen Rotzog.

"Gray and Melikrides," said Ames, "began working for the outfit only recently and did not know much about the spy work it carried on. But one thing Gray was definite about. And Tom, you can take a bow. Rotzog isn't afraid of any rocket builder in this world except you!"

Tom smiled and said, "I'll reserve decision on it being a compliment until I find out more about what Rotzog's really after."

Tom was very thoughtful as he left the building, Bud at his side. He also was puzzled. Why wasn't Rotzog worried that another entrant in the rocket race might keep him from realizing his dream of redeeming himself? When he expressed this thought aloud, Bud at once said:

"That's easy, pal. You—and your Dad—are light-years ahead of everybody else when it comes to trying out radical new ideas. Just look at that set-up you're putting in the Star Spear! With it, you could be master over this earth."

"Get thee behind me, Barclay!" Tom's grim look turned to a smile. "There are too many nuts like Rotzog on this planet! I couldn't handle all of them!"

As the day progressed, Tom crossed paths with his father, who was hurrying toward the control blockhouse with a distracted air.

"Everything okay, Dad?" Tom inquired.

"Fine," replied Damon Swift. "But I've just received news from Washington that is rather unsettling. One of our main rivals, the European consortium, is nearly ready to launch from their site in Morocco. Tomorrow's test flight of the CosmoSoar isn't coming a moment too soon!"

"I'll say!" Tom cried. "If the test goes well, we'll have to speed things up here."

"Yes, son," Mr. Swift agreed. "I'm hoping to put you and Bud in orbit within ten days."

He paused and then added gravely: "Tom, everything must be fully tested before you take off into space. I want to win the rocket race for the good of Swift Enterprises and our country, but not at the risk of your life!"

"I know that, Dad," said Tom softly.

Tom returned to the workshop where he was testing one of the new engine couplings for the redesigned Star Spear. He tried to focus on the problem before him, but other matters seemed to interfere. An examination by Radnor's team had revealed minute explosive

squibs with chemical 'time fuses' behind the acid container clamps on the Flying Lab. Who had come aboard unseen and planted the murderous devices? No clues or fingerprints had been detected. The obvious suspect was the man Arthur Gray had assisted onto the island, the man who posed as an engineer named Eskol. Not a trace of him had been found, and Radnor had reported that the real identity and hiding place—and intentions—of "Eskol" were subjects Gray had refused comment on. Nor had there been any success to date in identifying the tiny island apparently code-named Carp; the captured chart was too vague.

And what role was played by Heliak Odysseus? Paolo Melikrides was obviously of Greek background; was there a connection? Was the wealthy Odysseus Rotzog's source of funding? But why?

Got to put these questions aside! Tom demanded of himself.

Yet even as he thought this, he realized that something else was gnawing at him.

It was something Dad said at dinner the other night...Tom thought.

His musings were interrupted by a telephone call relayed from the island central switchboard. Tom asked who the caller was.

"He said he knew you'd take his call," said the operator. "He gave his name as Rocket Boy."

Tom's sober visage broke into a grin. Gabriel Knorff! Tom took the call, forgetting for the moment that the photographer had been suspected of deliberately causing the distraction that allowed Arthur Gray onto the island.

"Hey there, Tom," said Knorff. "Rumor has it among the paparazzi underground that you're about to blast off in that big rocket ship!"

"Well," said Tom, "I can't really confirm that. We're still in the testing phase."

"When the ship goes up, the whole world's going to know it right away. You won't be able to keep it a secret."

"That's true," Tom conceded.

"It sure would help what I laughingly call my 'career' if I could get some on-the-spot photos of the big launch."

Tom weighed this for a long moment, then said, "Tell you what, Gabe. If you can get over to the mainland opposite Fearing by 7 AM tomorrow morning, I'll have my pilot pick you up in one of our seaplanes."

Knorff sounded astonished. "You mean the launch is tomorrow?"

"I'm not saying that," Tom replied. "We won't be sending anyone up for a while yet. But I don't see any harm in your photographing some of our tests." Knorff accepted the offer enthusiastically, and Tom told him the location of the wharf used by the Fearing Island team when ferrying supplies.

When Tom told his father of his actions, Mr. Swift reacted with irritation. "Tom, you should have checked with me in advance," he said. But then his voice softened. "Still, I refuse to treat this competition as a top secret government project. I don't suppose there's any harm in having an outsider document the test launch."

"I'll make sure he doesn't get underfoot," Tom assured his father with apology in his



voice.

The following morning the Monday sky was unusually clear, the stars continuing to gleam down almost until the sun nosed above the horizon. Tom stood at the window of his living quarters, gazing at the awesome, skyscraper-sized CosmoSoar. The ochre rays of dawn made the metal colossus a glowing silhouette against the deep blue sky.

Tom's eyes traveled absent-mindedly down the hull of the craft, pausing to note the three gantry towers rising like stubby fingers around her. Again, something seemed to stir in his mind like a distant warning bell.

Well, who wouldn't be jittery? he said to himself. It's a big day!

The pilotless test launch was scheduled for two in the afternoon. Tom breakfasted with his father and some of the CosmoSoar engineers, all of whom assured him that the countdown continued to proceed without a hitch.

Shortly after eight a Swift Construction Company seaplane splashed across the waves and taxied up to the dock near the rocket facility. Bud was the pilot and Gabriel Knorff his passenger. Decked out with bulky camera cases, the red-haired photographer trotted across the dock and began to pump Tom's hand excitedly.

"Hey, this is great!" he exclaimed.

"You don't mind if we x-ray your cases and equipment, I hope," said Tom.

Gabe frowned. "It won't ruin my film, will it? I still use real film—haven't gone digital yet."

Tom grinned. "I understand. But don't worry, our special detection instruments don't use 'real' x-rays."

The young inventor assigned Bud the responsibility to keep a close eye on Knorff, an assignment Bud did not particularly desire. But he acquiesced with a nod.

"Just so I get to watch the test flight," he said quietly, a comment that caused Gabe's eyebrows to fly toward his hairline.

"I think half the Atlantic coast is going to see this one," responded Tom. "In fact, Phil tells me quite a few ocean craft are anchored just outside the security zone. I guess word gets around."

"Maybe one of them's your pal's yacht," said Bud to Knorff. "You know—the Heraklona?"

"Listen, I know how you must feel, you guys," Knorff answered. "I heard about what happened when you tried to pay Odysseus a call. But I only met the man a few times, just to get a gig. If he's got something against your rocket project, I don't know anything about it."

"What kind of man is he?" Tom inquired.

Knorff hesitated, as if at a loss for words. "Sort of suave, worldly. What's that word?—cosmopolitan. You know what? I think he's insecure, always trying to one-up his father."

"And with that," said Bud, "I think I'll give Gabe the grand tour of our island paradise."

He gave Tom a look that seemed to say: this is hitting too close to home!

Tom sighed inwardly and headed off to his workshop.

Noon passed, then one o'clock. Now steamy plumes were rising from pressure vents

around the base of the mighty rocket ship. She seemed to be gathering strength, ready to make her skyward leap!

In the control blockhouse, all was tense but totally calm. Damon Swift glanced out the multi-thickness window toward the CosmoSoar for the thousandth time, then around the room, alive with flickering monitors and wavering readout dials.

Where's Tom? he wondered. This is where he belongs! Attempts to raise Tom on the base phone had been unsuccessful.

The seconds ticked away, and the lightboard on the wall showed the seconds remaining. T minus 473 and counting.

Less than eight minutes to go!

"Mr. Swift!" one of the engineers called out from her control panel. "We've got someone out on the field, too close to the ship!"

The elder scientist looked out the window again and spied a running figure headed toward the blockhouse. "It's Tom!" he exclaimed, puzzled. "Let him in!"

In moments the young inventor was standing before his father, panting heavily. "Dad, I—I—"

"Catch your breath, son," said Damon Swift.

"No time," Tom gasped. "I ran—closer to here than to a phone—and the televoc—"

"I know; the televoc signal can't penetrate these walls. But what is it?"

Tom forced the words from his lips. "Dad, you've got to stop the countdown!"

"Stop the countdown?" Mr. Swift gaped at his son, amazed.

"Listen to me!" Tom cried, seizing his father's arm, sensing that every eye in the room was on him. "Something's been bothering me, and it hit me just as I was halfway here—the gantry tower, the one that was sabotaged!"

"It's been fully repaired," said Mr. Swift.

"That's not the point. Think of how the three towers are arranged in relation to the stabilizing fins. You said yourself that there was no damage done when the Cosmo shifted after the tower gave way. But that's because of the position of that one tower! Similar damage to either of the others would have brought down the whole ship almost immediately!"

Damon Swift looked thoroughly perplexed. "But what does this have to do with—?"

He halted abruptly.

"See, Dad?" continued Tom breathlessly. "The sabotage wasn't supposed to destroy the Cosmo! It was just a brief distraction while Eskol sneaked aboard the Star Spear."

One of the engineers now spoke up. "By why try to ruin the Star Spear and not the other? He could have taken both out by having the big ship collapse in the direction of the little one, right?"

It was the elder Swift who answered. "Why? Because he needs the CosmoSoar. Because —"

It was Tom who finished the thought. "Because he plans to hijack the rocket during the test flight! He's somewhere on board right now!"

Mr. Swift ordered a halt to the countdown. But Hank Sterling, who was in charge of this

aspect of the system, looked up from his panel a moment later, his face shining with perspiration even in the dimness of the blockhouse.

"Something's wrong!" Hank exclaimed. "I can't put it into shutdown mode! The system's not responding!"

Mr. Swift, assisted by Tom, desperately tried alternate ways to deactivate the ongoing countdown process, which at this point was largely run by computer. "Nothing's working," declared Mr. Swift.

"Eskol's seized control of the electronics somehow," murmured Tom in helpless frustration. "Keep trying!"

But time ran out. The last number flicked off the lightboard, leaving only zeroes. Immediately the blockhouse began to vibrate, struck by the power of titanic engines spewing fierce fire against the ground.

"The rocket ship!" breathed Mr. Swift in despair. "It's launched itself!"

## CHAPTER 15

### PHOTOGRAPHIC EVIDENCE

FOR A MOMENT all thought of the seriousness of the situation was banished by the spell of the CosmoSoar. At first there was no hint of movement, just a wall of white fog, like a wreath of chalk dust, girdling the bottom of the craft. Then flickers of yellow, orange, and red began to pierce the fog, burning it away as the blockhouse vibrated to the impossibly low roar of the engines.

Now at last the great silver spire began to move, inching up as slowly as the mercury in a thermometer. As the entire base of the rocket ship became visible over the haze of exhaust, it was easy to see how different the ship looked from other orbit-bound craft. There were not two or three concentrated points of flame. Instead, the thrust-fire spread itself evenly in a ring all around the periphery of the base.

"Onset Two!" called out one of the engineers. This was a critical point at which the flow of fuel quickened and the lifting fire burned more brightly. The CosmoSoar began to accelerate, clearing the gantry towers and heading skyward like a free balloon.

"All nominal!" reported Hank Sterling. "One-thousand foot mark."

There was muted cheering in the room.

"What are you going to do, Dad?" asked Tom, gently.

Damon Swift continued to stare out the window at the luminous ring shrinking into the blue. "What can I do?" he asked after a moment.

The rocket showed no deviation from its original flight plan during the first several minutes of its outbound passage through the atmosphere. The lowermost "rind" of the vehicle swung open and separated from the inner hull at the precise moment programmed, as the stage inside it ignited. Sterling soon reported that it was smoothly paragliding toward the ocean, in one of several areas kept clear of ocean traffic on that day.

"First stage cut-off," announced one of the monitoring engineers presently. "We have separation!"

"Stage 2-X—ignition!" came the voice of Hank Sterling. The level-two external stage had activated.

Suddenly another engineer, Marilyn Hagen, stood up at her console and waved Damon Swift over. "Mr. Swift—we've got three degrees of axis change. No, it's ongoing—five degrees now!"

"Where's he taking her?" muttered Mr. Swift.

The answer was evident by the time the inner second stage had flamed out and been cast away from the payload stage.

"A very elongated orbital trajectory," Tom declared, coordinating the figures from several tracking instruments. "He's raised the apogee by tens of thousands of miles so far." The young inventor gasped as a new thought struck him—an incredible thought.

"Dad—he's trying to reach the moon!"

"Then he's committing suicide in the most spectacular way possible," said Mr. Swift.

"He must know the Cosmo isn't equipped for an airless landing. And even if it could be managed somehow, there wouldn't be enough fuel for a liftoff and return."

"But that's just what he's doing," Sterling confirmed. "He's ignited the third stage engines!"

Everyone watched tensely as the trajectory coordinates slowly changed. Fortunately, they were still receiving telemetry readings from the ship, even though it resisted their control.

After long minutes Tom announced, "Engines off."

"But not soon enough," Mr. Swift observed. "He's on course for a rendezvous with the moon."

"Can't we contact him?" Marilyn Hagen asked.

Tom responded on his father's behalf. "We can try."

Hank Sterling stood up behind his console. "What's the point? Telemetry shows that his fuel is exhausted. There's nothing we can do to bring him back now."

"Nevertheless," said Damon Swift firmly, "we need to know his motives, at least." He instructed one of the engineers to attempt to establish radio communication.

Just then there came a loud pounding on the heatproof outer door of the blockhouse. Bud

Barclay was admitted, followed by Gabriel Knorff. Both looked disheveled.

"Mr. Swift—Tom—listen!" Bud cried. "The rocket may have been sabotaged!"

Tom's father nodded coolly. "You're a little late, young man."

"It's my fault," exclaimed Knorff. "Don't blame Bud here."

"What happened?" Tom asked.

"Oh—I pulled one of my stunts," said the photographer, obviously embarrassed. "Bud was showing me around in a jeep, and when we stopped he jumped out, and I—"

"He jumped over to the driver's side and took off!" finished Bud.

"I wanted to select a good angle for a picture of the launch," Knorff said defensively.

"That's how great photos are made! Anyway, I took some back roads, if you want to call them that, and came out pretty close to the other ship, the little one. I set up my camera and zoomed in close—beautiful shot, by the way—"

"Tell us your point, please," demanded Mr. Swift impatiently.

Knorff gulped. "I saw two men running toward the CosmoSoar! They were approaching from behind it, as if they didn't want to be seen from this control room here. I got a photo of them before they entered one of those framework towers and couldn't be seen anymore. Within a minute, though, one of the two reappeared and ran off into the bushes."

"Listen to this!" exclaimed Bud. "The man who didn't come back down—"

"I'll tell it," Gabe interrupted. "He was balding, middle-aged—"

This time it was Tom who interrupted. "Eskol!"

Gabe Knorff grinned. "Call him what you want, but I've spent years recognizing celebrities beneath their public disguises. That man was Heliak Odysseus!"

Tom's mouth dropped open at this amazing revelation! "Then that means..."

"It means he's been here on the island for days, maybe weeks!" said Bud. "Can you beat that? But how were we able to talk to him on the Heraklona that day?"

"Because we didn't!" Tom responded angrily. "We talked to a voice who claimed to be Heliak Odysseus. It must be something he and his captain set up in advance."

Mr. Swift now told Bud and Gabriel what had happened to the CosmoSoar, concluding with: "So it seems our stowaway billionaire is on a one-way trip to the moon." He glanced back at the communications engineer, who shook his head negatively. "He doesn't care to communicate right now," Mr. Swift added. Then he turned back to Gabe Knorff. "But what about the other one, the one who came down from the gantry?"

"I don't recognize Gabe's description," Bud declared.

"But I do have a photo," Gabe reminded them.

Tom now rushed Knorff and Bud toward the door. "Come on! We'll use the photography lab on the Sky Queen!"

In fifteen minutes the three of them were examining an enlargement of Gabe's chance photo. The second man, running next to Odysseus, was plainly dressed in base work clothes.

"Bud, doesn't his face look a little familiar?" Tom inquired.

"Not really," Bud replied. "Why don't we let Radnor take a look?"

They took the photo to Phil Radnor, who frowned as he studied it. "It does seem like somebody I've met," he remarked uncertainly. "But I can't quite place him. Maybe if I run through the computer records of our work force..."

He had glanced at, and passed over, eight records when he stopped. "That's him!" he cried, nodding at the image on the screen. Then he looked at the name, and looked up at Tom. "And guess who? Brad Yardell!"

"Good night!" exclaimed the young inventor. "Don't you remember, Bud? That's the guy Arthur Gray pretended to be!"

"They must be working together," Radnor declared. "It says here Yardell arrived back on the island from his vacation days ago. We'll conduct a search right away."

Tom and Bud wasted no time returning to the blockhouse and relating the discovery to Damon Swift.

"What do these people hope to get out of all this?" he mused. "The prize? But I doubt EARL would award the prize under such conditions; and at any rate, Odysseus won't be returning to Earth to collect it."

"Not that he needs the money in the first place!" added Bud.

"But don't forget Rotzog, Dad," Tom pointed out. "He may have gone back to working for Brungaria—or at least for the Sentimentalists faction. We joked about it, but it might be that Rotzog's bosses see some sort of strategic advantage to be gained through a moon flight."

"Even a fatal one-way trip?" snorted Mr. Swift. "That hardly seems likely."

He strode over to the main communications station and stood next to the console.

"Anything yet?" he asked the monitoring engineer.

"Nothing, sir," was the grim reply.

"Maybe Odysseus didn't survive the force of acceleration," Bud speculated. "It can be pretty rough."

"No," said Hank Sterling. "He's definitely alive. Telemetry from the cabin has picked up signs of movement. He just doesn't want—"

But his comment was interrupted by an intercommed message from Phil Radnor. "Mr. Swift? Tom?"

Damon Swift picked up the microphone. "What is it, Phil?"

"Something pretty significant," he responded, "and a little bit hard to believe. We've got a transonic jet cruiser approaching Fearing from the southeast—a private job, pretty big. We were about to scramble, but they've radioed their identity and asked permission to land."

"Who is it?" inquired Mr. Swift. "We're too busy to accommodate the media."

"He says he's Demetriou Odysseus!" Radnor answered. "Heliax's father!"

## CHAPTER 16

### OFF INTO SPACE!

MR. SWIFT RUBBED his eyes, as if trying to make the whole problem vanish. "I can't believe it," he said wearily. "Demetriou Odysseus!"

Bud's eyes flicked back and forth between Mr. Swift's face and that of his son. "But I thought he'd retired years ago!"

"He has," Tom responded. "Or maybe I should say—he had. Shall we let him land, Dad?"

Damon Swift smiled for the first time in a long while. "He's not the sort of person who takes No for an answer, I gather. At any rate, he may be able to shed some light on his son's behavior." He directed Radnor to radio permission to land, and in minutes they heard the muffled whine of a jetcraft overflying the island.

"Now that's a jet!" Bud exclaimed admiringly, watching the large craft set down on the runway. He hastily added: "Of course it's just a waterbug compared to the Sky Queen."

Mr. Swift directed two of the blockhouse team, not needed at the moment, to accompany Gabe Knorff to Radnor's office.

"Aw, look," Knorff protested, "just a couple shots of you and—"

"No chance, pal," pronounced Tom. "You have a way of getting into trouble, Gabe."

The photographer nodded wryly. "Guess I can't disagree." He was led away forthwith.

Demetriou Odysseus was conveyed to the blockhouse by jeep, accompanied by two assistants, sturdy women who seemed well able to protect their billionaire charge. They flanked Odysseus on both sides, partly supporting him as he shuffled along, a gnomelike stooped figure with a wisp of white hair.

"Welcome to our Fearing Island facility, Mr. Odysseus," said Mr. Swift, offering his hand.

The hand was ignored. "I am here because of my son," said the magnate brusquely. His voice, heavily accented, had surprising strength. "Where is he?"

Mr. Swift was about to reply when Tom touched his sleeve. "Why do you believe he's here, sir?" inquired Tom, trying to keep suspicion from his voice.

The man coughed and fixed Tom in a fierce, hawklike gaze. "If you wish civility between us, Junior Swift, do not patronize me, and do not insult my intelligence! I received a lengthy message from him not twelve minutes ago, transmitted by his

personal secretary according to his instructions."

"What did the message say?" Mr. Swift asked. "And lest you tell me it was personal, I would remind you that this island is secured by the government of the United States. Your son has committed acts of sabotage against our project, and we would be within our rights to have you detained for official questioning."

Odysseus took a handkerchief from his pocket and wiped his nose, regarding the elder Swift coldly. "It was incoherent—insolent blubbling! But he claimed to be here on the island, playing some sort of role in your rocket program. He demanded—demanded!—my presence. Was he lying to me? He is not here?"

"Not any more," said Bud. "By the way, I really enjoy your cable channel, sir!"

Odysseus answered his enthusiasm with a withering glare.

Mr. Swift tried to express himself gently, as one father to another. "You may wish to sit down. What I have to tell you—no doubt you will find it distressing."

"Am I an old woman?" growled the billionaire. But he did not resist as his assistants helped him into a chair. Mr. Swift and Tom proceeded to tell him what had occurred in some detail.

"You are telling me Helix is—" Odysseus pointed skyward.

"We're tracking him now," Tom replied.

"And he is going to the moon?"

"So it seems."

"Not to return?"

"To return is impossible," said Mr. Swift gravely.

Odysseus studied Damon Swift's face for a moment, then burst into a shrill laugh. "My boy! And what a boy he is!" His tone shifted abruptly. "You will let me speak to him, please."

Mr. Swift shook his head. "He refuses to answer."

Demetriou Odysseus struggled to his feet. "He would not dare to refuse me! Where is the microphone?"

Mr. Swift shrugged and motioned for the communications engineer to hand Odysseus the microphone. After a moment the engineer nodded. "Go ahead, sir. He'll hear you over the speaker in the flight cabin."

The wizened man stared at the microphone as if it were the head of a snake, then moved it close to his lips. "Helix! Helix Odysseus! This is your papa speaking! You will answer immediately!"

There was a pause and a clattering sound.

"He dropped the mike!" Bud whispered to Tom.

Next came a quavering rush of words, in the Greek language. "Stop!" cried Odysseus.

"You will speak English—it is courtesy for our hosts, the two Swifts!"

"Papa?" came the voice from space. "It really is you, Papa?"

"Who else? Now what have you to say to me, eh?"

"Papa, I am far away now, up in—"

"Yes, yes, in a stolen rocket ship. This I know. Why have you done this, Helix?"



"I thought—"

"You don't have to tell me," Demetriou Odysseus interrupted. "I know! Always you want attention from me, always! Since you were baby."

"You never loved me, papa."

"Feh! I love all my children," exclaimed the old man. "Did I not give you the company?"

"But always you are looking over my shoulder..." whined the son.

"Because you are a fool! Do you dare disagree?"

There was a long pause. Then Heliux Odysseus spoke again, in bitter tones. "Perhaps. But I am not such a fool after all, because now our family name will go down in history. I crash myself into the moon! Who else has done that, ever?"

Mr. Odysseus nodded, as if his son could see him. "Yes, that is truth. Very well, son. You have shown courage and daring; I am proud."

Heliux sounded as if he were on the verge of tears. "Oh, papa! Now I am happy!"

"Mmm-hmm, it is good. Goodbye and farewell, then." The billionaire set down the microphone and indicated to the engineer to cut the sound. "He will go on and on. I do not wish to hear."

Mr. Odysseus snapped his fingers, and his two attendants resumed their stations at his side. "How long before he falls upon the moon, then?"

"We will have to calculate," Mr. Swift replied. "But it will be about three days from now."

"And you can do nothing?"

Damon Swift shook his head. "His fuel is exhausted, and no craft from Earth could be launched in time to intercept him. No country has a lunar program at the present time, you know."

"Then the fates have made their decree." Odysseus began to shuffle toward the door. As he and his companions left, he turned slightly and said:

"Swift! My boy—he is an idiot! May yours turn out better." And then he was gone.

Bud let out his breath in a whoosh. "Yeow!" he exclaimed. "If that's what billionaires are like, I'll stay poor!"

Tom approached his father, who was watching Odysseus board the jeep for his return to the jet. He spoke quietly. "Dad, we can't just stand by while the man's son kills himself in space."

"I know what you're thinking, Tom," responded Mr. Swift. "But even your Star Spear can't beat the Cosmo to the moon."

Hank Sterling now approached them. "Well, here's something that may affect your plans."

"What, Hank?" Tom asked.

"We now have enough tracking numbers to make a closer calculation of the CosmoSoar's trajectory," he said, "and it looks like we were wrong. The payload section isn't going to hit old Luna after all!"

The two Swifts were astounded. "No? What's the revised course?" demanded Tom's father.

"Best I can tell, he's going to loop right around in a crack-the-whip maneuver, and head back to Earth!"

"Then there's hope for him after all!" Tom cried excitedly.

"Don't break out the champagne just yet, Tom," Sterling warned. "I estimate he'll hit the atmosphere at far too steep an angle for the paraglide chute to work properly. The stresses would just rip it to pieces."

Bud spoke up. "Then—he'll burn up?"

"No, Bud," responded Mr. Swift gravely. "The Tomasite coating, combined with the magtritanium composition of the hull, will prevent a complete meltdown. But the internal temperatures will be tremendous nevertheless—and at the end, he'll hit the ground like a meteor."

"But maybe he'll fall into the ocean!" objected Bud.

It was Tom who answered. "At several times the speed of sound, water packs as mean a wallop as solid earth. As a pilot, you should know that." Tom turned to his father. "Dad, that means his only chance is if we can remove him from the ship before it hits the atmosphere!"

Damon Swift's tired eyes met the anxious eyes of his son. "And that's a bit over six days away. Do you think you can complete the refitting of your rocket ship before then?"

"We did something similar before, on the jetmarine," Tom replied. "And this time the work is already in progress. I'm sure we can do it!"

Tom didn't have to wait for his father's words to know that permission had been given. The next days were days of intense work, both on Fearing Island and at the Swift Enterprises plant in Shopton, where new parts were fabricated to be jetted down to the island. Mr. Swift also directed that a large work crew be ferried down, under the supervision of Arvid Hanson. All workers were given careful background checks by Harlan Ames.

The Star Spear was removed from its launch pad and delicately lowered into a special cradle, which was then wheeled into a protective shed, guarded day and night. Within the shed the hull of the rocket was opened up and the new mass-accelerator thrust system installed. By Friday—the Friday of the same week in which the CosmoSoar had made its fateful liftoff—the rocket engines were ready for a "real-time" test, the Star Spear held fast within special clamps that would register the force of thrust, amount of vibration, and the internal and external temperatures.

After studying the readouts from the test, Tom gleefully pronounced the new system a complete success.

"We'll be ready for launch on Sunday!" Tom exclaimed to his whooping best pal.

But Heliax Odysseus was not a picture of happiness. Now willing to respond to radio contact, he had taken his temporary reprieve hard, reacting with an almost insane rage to the news that he would be returning to Earth aboard Tom's craft.

"Tricked, I was tricked!" he shrieked. "It was Rotzog!"

"Rotzog? What did he do?" asked Hank Sterling over the radio link as Tom and Phil Radnor listened.

"His automatic program—to control the flight—it was faulty!" was the sputtering reply. "I fed it into the onboard computer myself. It was to take me to the moon, to die there with honor, not go around it! Now I will be a laughingstock."

"Well, that answers a few questions," Radnor observed, after the link was broken. "He basically hired Rotzog as a freelancer. Brungaria had nothing to do with it after all." But Tom looked thoughtful. "I'm not so sure. Something tells me there's a bigger picture we're not seeing yet."

On Sunday morning, the day of the launch, the entire Fearing Island facility was abuzz with activity by 5 AM. The Star Spear was again standing upright on her launch pad, her needle nose aimed at the fading stars.

Tom had already breakfasted, barely sleeping the night before. He made several last-minute calls via televoc and base telephone, verifying that the scheduled preparations were proceeding as planned. The final call was the go/no-go directive to Amos Quezada, the director of the launch crew.

"Well, chief?" asked Quezada. "Lookin' like a good day?"

"It's a fine day all the way around," replied the young inventor.

"Then up she goes!"

Having given the last orders, Tom dressed quickly in the lightweight garment he and Bud would be wearing beneath their pressure suits. Now the entire base was in action. Trucks carrying last-minute emergency items were unloading at the gantry. Water and rations were being put aboard.

Mr. Swift hurried to Tom's side by the gantry platform. "Mother and Sandy ought to be here by 7," he said anxiously.

"I certainly wouldn't want to leave without saying good-bye to them," Tom said. "By the way, Dad, the Rocket Commissioners from EARL have set up a secure link to receive our tracking data. Even though it doesn't seem very important anymore, I'm still planning to win that competition for Swift Enterprises and—for you."

Tom looked away, and there was a moment of silence between the two Swifts. Then a sound of jet engines caught their attention. Tom said, smiling, "Here's Mom and Sandy ahead of schedule."

When the plane landed, Tom found that Mrs. Swift was very quiet. He knew she was fighting tears. He put his arm around her.

"Don't worry, Mommy," he said, using his childhood name for her. "I'll be back before you get used to my being away."

"Be careful, son, and good luck," she managed to whisper.

Sandy appeared more composed. "Brother, here's someone who wants to wish you bon voyage," she said, handing Tom a cellphone.

"Tom?" came a delicate, accented voice. "I hoped to reach you before your 'bird lifts up,' as the expression goes."

Tom grinned. "Hi, Bashalli. What's new?"

"Don't you dare ask me what's new when it is you who are about to do something spectacular!" she retorted. "I suppose it is too late to talk you into staying down."

"Afraid so, Bash. We've already paid the ground crew a lot of overtime, you know." Bashalli Prandit giggled at this. "Then you must go up, I think! But you will be careful? For me, Thomas?"

"I'll be careful enough for ten people," replied Tom. "Besides, what can go wrong in a vacuum?"

After saying goodbye to Bashalli, he hugged his sister and mother, and watched as they were carried by jeep to a comfortable lounge on the far side of the launch field, where they could watch the liftoff safely. The jeep stopped briefly upon crossing paths with Bud and Chow Winkler, and more farewells were exchanged.

In a minute more Bud and Chow had arrived at Tom's side.

"Ready to go, Skipper!" Bud exclaimed jauntily. "Stuff me in and seal the can!"

"Brand my space salad, you sound like a sardine!" Chow observed. The cook held a square, flat box in his hands, carefully wrapped, which he now handed to Tom. "Tom, your Dad said you'd have enough room fer this up in that rocket cab, so here she is—fer the pair o' you."

"What is it?" asked Tom.

"Aw, nothin' much," Chow responded bashfully. "Jest a lil goin' away present. But ya gotta take it with you topside—into orbit."

As Bud held the box, Tom opened it up. Inside were two western style shirts, spangled with silver stars and virtually aglow with radioactive colors.

"My eyes!" cried Bud. "Where's my cosmic-ray goggles?"

Chow looked down. "I jest thought o' them shirts like a couple of lantern beacons—'n case you two dang fools get yourselves lost up there!" His sun-wrinkled eyes were beginning to tear up, and after Tom and Bud hugged him farewell he could only nod and snuffle.

Hearing his name called at this moment, Tom left the others and went to receive a call from the Rocket Commission, relayed by satellite from EARL headquarters in Belgium. The chair of the commission, Dr. Hercule, wished Tom luck and described the sealed instruments that would be recording the official tracking data from monitoring stations around the globe. "The instruments are set. On behalf of the European-American Rocketry League and the members of this special commission, I wish you a successful flight!"

Returning to the platform, Tom saw that Bud, Chow, and Mr. Swift had been joined by Arv Hanson, Phil Radnor, and Hank Sterling.

Tom took a deep breath and looked at Bud. "Ready?"

"Check!"

The two boys shook hands with all the men and in return received pats on the back and wishes of Godspeed.

Hank Sterling said, "Never mind that boy billionaire—win that prize!"

Hanson whispered, "Watch out for Rotzog. He's not in the race, but he may still try to ruin you!"

Chow added, "Give my regards to them Martians. Mebbe you c'n find out what they eat

up there!"

"I'll guard this island with my life while you're in space, Tom," Radnor promised.

The others walked down the steps toward the control blockhouse, leaving only the two spacefarers and Damon Swift. The young inventor bade his father farewell last of all.

There was a long, firm handclasp as silent messages were conveyed from the eyes of each. Finally Mr. Swift said:

"I'm immensely proud that you are carrying on my work so admirably."

Tom and Bud entered the gantry elevator and rode to the pilot's hatchway leading to the flight cabin. When the hatch was sealed, the gantry was rolled 200 feet from the Star Spear. Unlike the CosmoSoar, Tom's rocket ship was designed to stand alone, resting on the cushioned tips of the maneuvering thrusters attached to its finlike guidance vanes.

In the cabin, Tom and Bud wordlessly scrambled into their protective suits and positioned themselves on their reclining acceleration seats, which automatically molded themselves around the bodies of the young astronauts.

Tom now radioed to Fearing's radar tracking center. "Countdown holding. Sweep a 360-degree circle with the dishes. We're going up in less than a minute if all is clear. Pay attention to the high level. If there's any danger it will strike above five hundred miles."

"Wilco!" the chief radar engineer called back.

The battery of gleaming radar screens began moving in silent, fantastic patterns. For fifteen seconds they swept the skies in every direction.

"Sky's clear!" came the report.

"Has the launching area been evacuated?" Tom asked.

"All clear below!"

Tom now flipped over to the blockhouse frequency. "Resume countdown!" he directed Amos Quezada. "T minus sixty seconds!"

Tom set the Spacelane Brain in action, then quickly lay back, flattening his seat on its liftoff support rack and buckling his safety straps.

"Sure your straps are tight?" Tom asked Bud tensely.

Across the cabin his friend gave a tug and nodded. "Won't be long now," Bud said.

"Good luck. I mean, to both of us!"

"T minus five—minus four—minus three—" came the voice from the blockhouse. The boys held their breaths.

"Minus one!" Down below, on the hull of the ship, a plastic patch, held in place by magnets, fell away in response to a signal initiated by Tom's mother. At once the name and insignia on the rocket were revealed. Between two words a bright red spear pierced an arrangement of seven white stars. Just as the bottle at a ship's christening symbolized the waters of the seven seas, so the symbol that the Star Spear would carry into space represented the seven stars of the Pleiades.

The watchers saw all this in a split second. Then came an eerie flare of billowing gases that blinded the eye like the flash of an acetylene torch. The Star Spear growled, roared, and stirred to life beneath her passengers.

A few seconds later Tom Swift's rocket ship was up and off on its journey into space!

## CHAPTER 17

### GHOST WINDS

THE ROCKET SHIP shivered as the engine blast tore the craft from the grip of Earth. Tom and Bud felt their bodies flatten against the racks as the enormous acceleration forces slammed them downwards. Inside the shielded cockpit the scream of the engines was like the low groan of a string bass.

"What power!" Bud murmured, as he turned his face to a porthole window and glanced down at the receding world as it seemed to fall away.

Out across the Atlantic the clouds, in reality drifting at eight thousand feet, appeared to hover just above the waves like a mist. The horizon was already sloping off, giving the earth a mound shape.

"Check time!" Hank Sterling radioed.

"Sixteen seconds and we've reached the ionosphere!" was Tom's excited reply.

Suddenly the rocket was jarred by a violent movement. The abrupt motion nearly wrenched the boys from their racks.

"Hey!" Bud cried. "Did we hit something?"

"Whatever it is, hang on!" Tom exclaimed, as the rocket ship gave a sharp twist.

The boys had just managed to grip the sides of their acceleration couches when the rocket, already angling skyward at 4500 miles an hour, gave an even more violent lurch.

"I think—we must be—caught in one of—those jet streams!" Tom managed to say between the violent jolts.

"'Ghost winds'!" Bud said breathlessly. "Will they throw us off course?"

Tom shook his head. "I planned for this contingency. The Brain will compensate."

Experienced pilots, Tom and Bud knew that these windstorms in the ionosphere travel as fast as a thousand miles an hour, aerial tides flowing for a certain time in one direction, then without warning reversing themselves. This reversal was exactly what Tom anticipated. The shift would free the rocket from the raging flow of air and permit the

ship to continue on its original course. Before he had a chance to express this hope aloud, the Star Spear suddenly stopped its erratic behavior, seemed to hesitate, and then resumed its normal acceleration.

"She's straightened out!" Bud cried, relieved.

Tom said, "Anyhow, we won't have to worry about the winds from now on. The air from here up will be so thin that the rocket won't even feel it."

"Check time!" came Hank's voice again. "One-six-five seconds—mark!" This was the end of the first phase of the launch. The rocket would now make a gyro-adjusted change of angle, and the thrust from the mass-accelerator engines would markedly diminish.

"There it goes!" Tom cried. "Do you feel the change, Bud? Clean as a knife."

"And feel that release of pressure!" Bud whistled.

Tom checked his monitor panel. "According to the Spacelane Brain, we're right on schedule. We're seventy miles up, flyboy!"

"And going faster every second," breathed Bud.

As the rocket rushed farther and farther from the earth, Tom reported to Fearing Island that the temperature and oxygen changes were being made perfectly. "And the fuel kicker is working just as we planned," he concluded.

"You sure picked the right name for your invention," Bud spoke up. "With that kicker hooked in, we've got about a million mulepower!"

Tom smiled and glanced out the porthole beside him. The world was rapidly taking on its true spherical shape. No land was now visible, but the ocean surface—which Tom and Bud had so recently traversed from beneath in Tom's jetmarine—was a glittering study in blue. The sky was no longer blue, however, but velvet-black.

Tom studied the output from the Spacelane Brain. "We're seventy-seven miles up," he announced into the radio mike "and our speed is 5200 miles per hour." The mighty engines would cut out automatically at an altitude of two hundred and seven miles. From that point the momentum of the Star Spear would carry them up with diminishing speed to the high point of their course, after which the ship would curve back downward in an elongated orbit to bring them into close proximity to the command module of the CosmoSoar. Radar tracking and careful calculations had revealed that the craft was headed for a self-destructive splashdown in the Caspian Sea—far from human habitation, by good luck.

Tom now contacted the other spacecraft. "Come in, Odysseus!"

"What do you want now, Swift?" returned the dolorous voice of Helix Odysseus.

"Well, we just thought you might like to know that our launch was successful, and that we are approaching our orbital parameters," Tom reported.

"I am thrilled for you," Odysseus replied sourly. "As for me, I have already been around the moon. I am quite tired of space travel."

"We'll see you in two hours and eleven minutes." Tom broke contact. The youthful astronauts looked at each other and grinned.

"Doesn't sound too happy, does he," observed Tom.

Bud remarked, "No complaints from this section, Skipper. What say we skip the race

and Billionaire Boy and go right on to Mars?"

"Speaking of Mars," Tom said, "I'd better turn on the video-oscillograph. Our space friends might want to communicate with us—now that we're established space pioneers."

"If it takes as long as before to figure out their symbols, we'll be back home watching our boy Heliax's cable network before you've deciphered the first sentence."

"That's where you're wrong, Bud!" Tom opened a panel next to his seat and withdrew a small laptop computer. "I brought our 'space dictionary,' as we call it, along for the ride. I should be able to feed the video outputs directly into the decoding software."

A buzzer sounded. "There's the ten-second alert!" Bud exclaimed. "In a little while now we'll be in free flight!"

Tom nodded. "Snugly inserted in our own little orbit."

"And on our way to win a ten-million-dollar prize," Bud added gleefully. "Tom, tell them we're going to take it up to Mars and convert it into Martian currency!"

The boys waited for the engine monitor lights to go out and the mass-accelerator to cease its thrust. Seconds went by. The lights flickered off—and on again.

Bud gave his friend a worried look. "Why's it doing that?"

Suddenly the blood drained from Tom's face as he noted the indicator dials on the fuel kicker monitoring panel. They were wavering back and forth wildly!

Then without warning there came a series of terrific vibrations as the Star Spear trembled like a plucked bowstring. The mighty engines abruptly charged into an acceleration greater than any Tom and Bud had yet endured. It seemed as if the boys' stomachs would be torn out of their bodies. Their face muscles contorted as their lips were pulled down across their teeth. Their shoulders lurched back as though they had been struck by two downswinging bats. A hot shudder raced through their bodies, and Bud gave out a yelp of pain.

"M-my arm!" he cried, indicating the arm that had so recently been injured. "Tom, I—I can't feel my hand!"

Fighting against the pressure of acceleration, Tom managed to summon up a diagnostic representation of the rocket on the screen before him. "The solarizer control coupling has failed!" he gasped. "The engines aren't throttling down!"

Tom and his best friend shared a glance of shared dread. They both knew the significance of this system malfunction. Unless the Star Spear's propulsion mechanism shut down promptly, the rocket ship would overshoot its planned orbit and hurtle unstoppably into interplanetary space beyond all hope of return!



## CHAPTER 18

### THE MAELSTROM

"HOW ARE YOU doing, pal?" yelled Tom over the muffled thunder of the runaway engines.

Bud managed a half-grin. "T-to tell you the truth, I've been better!" His face was drawn, and he was straining to support his damaged arm with the other.

Grimacing as he struggled against forces that made him feel as if his flesh had turned to lead, Tom unbuckled his safety harness and half-slid, half-fell from his seat.

"What're you doing?" Bud cried.

"There's only one way to shut down the engines now!" was Tom's grim response. He closed and sealed the transparent visor of his protective suit, and opened the oxygen valve. Bud's lips were moving in protest, but the young inventor could no longer hear what he was saying.

Lying almost flat against the deck Tom shinnied his way across to the curving bulkhead, where a sealed circular hatch was set into the floor. He unsealed the hatch and swung it open with a grunt. A light popped on in the narrow, round chamber below, which functioned as an airlock. Tom climbed down into the chamber, pulling the hatch closed above him and activating the pump that would evacuate the precious air from the compartment. The airlock depressurized, he opened another hatch and dragged himself, with great wrenching effort, onto a metal ladder.

Tom was now in a narrow access shaft that ran parallel to the fuel kicker's acceleration conduits. To permit waste-heat dissipation, the very bottom of the shaft, far below, was open to the outside. Tom could see the blinding flare of the rocket exhaust tearing at the edge of the opening.

Feeling as if he weighed a ton, he tightened his grip on the rungs. Can't let myself start to slip! he thought. In his present position he could easily be spun off into space!

Tom eased his way downward a few feet, until he was opposite the solarizer compartment panel. Though the device itself was functioning flawlessly, it was here that several critical control circuits crossed. Some undetermined mishap in this section was fouling the operation of the entire propulsion system.

He unlocked and slid open the panel and examined the electronic coupling now exposed to view. At first he could detect nothing amiss, but then he saw a flutter of sparks at one of the connector junctions. It had partially worked its way out if its positioning pins.

This won't be too hard, Tom said to himself. With his insulated gloves he forced the two

sides of the connector back into place. Immediately the engines throttled down and shut off completely—the control impulse had gotten through! Using some hardware from the kit attached to his belt he rigged up a clamp to stabilize the failing pins.

Within minutes Tom was again in the pressurized control cabin, pulling himself through midair—for with the engines shut down, the Star Spear was in freefall, falling around the earth and no longer resisting the pull of gravity.

"Glad to see you," said Bud, wincing. "How'd it go?"

"We're back in control, but we'll have to compensate for this change in our orbital parameters," Tom replied. "Are you in much pain?"

Bud shook his head. "Not too much. But on that side I'm numb from the shoulder down."

"Probably additional bruising on the nerves in your arm," commented Tom. "Bud, if a life weren't at stake, I'd take us down right now."

"Excuse me? And lose ten million dollars?" The young pilot laughed. "Better you should saw off my arm and leave it behind!"

Tom gave Bud some painkillers from the emergency locker and then turned his attention to replotting their course. He shifted the axis of the ship and activated the rockets for a ten-second burst. But when he again studied the output from the Spacelane Brain, his brow furrowed.

"I don't understand it," Tom murmured. "The SLB shows only a partial course correction—not even ten percent of what we need." He again began to manipulate the controls. Suddenly a small indicator light came to life.

"Isn't that the—" began Bud.

"Yes!" exclaimed Tom. "Something's coming in on the video-oscillograph!"

The rocket ship was receiving a transmission from the mysterious space beings!

"Maybe they're congratulating you on getting this bird into space," Bud commented, awestruck.

Tom connected the laptop translating computer into the receiver output channel and activated the space dictionary software. Immediately rows of intriguing symbols began to crawl across the small screen, with the device's tentative translation appearing below. Tom swiveled the computer so that Bud could see the screen.

The first part of the translation read:

ORBIT VEHICLE FROM THIRD PLANET WE ARE FRIENDS NON-CONSISTENT  
RESULTANT SELF-EXPONENTIATING

"Frankly, Tom, I received better kudos in the cards my relatives sent me when I graduated high school," Bud commented wryly. "And there were checks enclosed!"

"Nonconsistent resultant self-exponentiating," mused Tom. "A 'nonconsistent resultant' is an error—a bad answer. Definitely something negative. As for the rest... It's referring to a runaway solution, I think. Could it be their way of adding emphasis? Bud, I think it's a warning to us—'danger'!"

"Oh, great!" responded Bud. "Does the rest of it tell what the danger is?"

"The computer can't translate it. But look at the symbols—a circular, symmetrical array.

It reminds me of something." Tom rubbed his chin. "Let's assume it's meant to express the tensor equations of Earth's gravitational field."

"Let's assume I understand that," said Bud. "But what's that over on the side? It looks like more of the same symbols."

"Yes," Tom agreed, "enclosed in a border—and inside the other array." Suddenly a look of alarm crossed the young inventor's face. "Bud, you know what a black hole is, right?"

"Sure. It's like a big gravitational whirlpool that sucks everything in. You don't mean—" Tom interrupted. "A standard-model black hole is as big as the solar system. But some theories allow for the existence of microscopic black holes in space, with gravitational effects that extend out only a few hundred miles. It would be almost impossible to detect something like that from a distance!"

Bud's face, already pale with pain, turned paler still. "Good gosh, maybe that's why you can't get the ship back on course! The hole is pulling us in!"

"It has to be that," Tom agreed. His face was grave. "We have to start maneuvering now if we're to get away." He began to punch in new instructions for the flight computers.

Bud asked, "Do you think the engines are strong enough to push us away?"

Tom paused and met Bud's gaze. "No. That's why I'm heading us toward the vortex, not away!"

Bud rubbed his forehead. "I must've taken too many pain pills. You want the ship to go into the hole?"

"Not into the hole, but around it," replied Tom tensely. "With enough velocity the centrifugal force will whip us around the edges of the hole, just like the Cosmo around the moon. It'll be like the high speed you pick up on the downslope in a skateboard rink that carries you up the other side. That extra speed is what will set us free!"

Tom was able to make some general calculations based upon the information transmitted by the space beings. He fed the final figures into the computers, then directed Bud to refasten his safety straps. "Turn a little so as to protect your arm from stress, pal. This is going to be a real rollercoaster ride." The main engines began to throb.

Although the Star Spear had been shooting along at thousands of miles per hour, to all the boys' senses the rocket ship had seemed suspended immobilely in starry space—until now. As the seconds passed, they began to experience a sensation of speed, as well as a strange, wrenching feeling of pressure.

"What's going on?" choked Bud. "My insides feel like they want to get out!"

"That's the real danger of a black hole," Tom responded. "The gravity differentials are packed so close together that matter is put under a strain. Eventually any solid object gets twisted and pulverized into subatomic fragments."

"But we're not going that close—right, genius boy?"

"If we do," said Tom, "you'll have every right to complain!"

The cabin was now filled with strange sounds—creaks, poppings, and metallic groans as the rocket's superstructure strove to resist being twisted out of alignment by the rogue forces. The illusion of headlong speed was powerful and irresistible. The boys did not speak of their growing discomfort, the frightening sensation that their very bones were

being slowly pried out of line.

Yep, like a rollercoaster, Bud thought, gripping his acceleration rack with white knuckles. And we haven't hit bottom yet!

Tom flinched as sudden pain flashed through his body. He knew he wouldn't be able to take much more!

The world turning gray around him, he managed a glance in Bud's direction. Bud had lost consciousness! Through teeth tightly clenched, Tom muttered:

"This is it!"

## CHAPTER 19

### RENDEZVOUS IN SPACE

TOM SWIFT KNEW the very instant when the Star Spear reached the point of closest proximity to the edge of the deadly space phenomenon. The whole ship, subject to a split second of overwhelming pressure, shrieked forth a sharp Clang! as if struck by a giant's hammer. Several of the transparent dial-covers on the control panel cracked and literally popped from their frames as the flat metal face of the console assumed a visible warp. Tom could envision the rocket's portholes shattering, with fatal consequences. His body seemed pressed between huge, invisible hands, trapped in a crushing grip. His eyes squinted shut and he choked out an involuntary cry.

And then the moment had passed. The pressure began to ease. They had survived!

Weak and gasping for breath, Tom let a few minutes pass as the stresses ebbed. Then, aching, he bestirred himself, quickly checked the rocket's position via the Spacelane Brain, and began to attend to Bud.

"Sandy—is Sandy OK?" murmured the young astronaut. Then his eyes, bloodshot, opened wide. "Tom! Is it over?"

"It's over, flyboy," said the young inventor with a reassuring smile. "How're you holding up?"

"Arm still numb," Bud replied, "but I'm not in pain. But you know something?"

"What?"

"Cable TV really isn't worth all this!"

This made Tom laugh aloud.

In a moment a mysterious new difficulty presented itself. Tom tried to contact the Fearing Island mission control team, and received only static in response.

"Could those forces have damaged the radio, or the antenna?" Bud asked. "Or—maybe the black hole itself is interfering with the signal."

Tom studied the ship diagnostics for a moment. "I don't see any obvious damage," he said. "And if the black hole were generating interference, we would have detected it during the approach."

"Then what's your theory?"

"My theory amounts to one word," responded Tom. "Rotzog!"

Bud groaned. "You mean he's jamming our signal? Then maybe we're over that island of his in the Aleutians!"

"No," Tom said. "Not even close—at least not yet. We're over Turkey right now, and the Aleutians are well below the horizon. It's my guess that the relay satellite we've been using is in range of any jamming equipment Rotzog might be operating from his base."

"That space rat!" Bud exclaimed. "Won't we need communications ability during our linkup with the CosmoSoar?"

"Yes, but we can contact Odysseus directly, without using the satellite. Let's try it."

In a moment Heliix Odysseus was heard over the speaker, his voice a mixture of bravado and fear. "Where are you, Star Spear? I don't see you!"

"Don't worry, Odysseus—the glare from the surface below makes us difficult to see," Tom radioed back. "But we're back on course after some—mishaps—and we should be reaching the rendezvous point within about eight minutes. Do you remember your instructions?"

"Yes, yes, of course! I am in the space suit, and already I have my hand on the airlock handle."

"Wait until we have you on the radarscope, then begin depressurization of the command module," Tom directed. "Try to stay calm."

"Of course I shall stay calm!" snapped the billionaire. "It is for the honor of my father, my family, and—"

Tom clicked off the system. "We don't need to hear the whole laundry list."

The rocket engines had been shut down after flinging the ship clear of the black hole, but now Tom powered-up again, the first in a series of maneuvers that would bring the Star Spear parallel with the incoming CosmoSoar. As the last burn was concluded, Bud called out:

"Skipper! Blip on the scope!"

"There she is," Tom declared. "We'll close-in over the next few hundred miles; then I'll pull back a tad to keep a safe distance." He radioed Odysseus to begin depressurizing the cabin.

Now the conical command module of the Cosmo was clearly visible against the tapestry

of stars. Minutes later, the ships only a few dozen yards apart, Tom made the final course adjustment and again unsealed the floor hatchway leading downward into the airlock chamber. This time Tom did not exit through the bottom of the airlock, but instead opened the larger hatchway in the curving hull. The triple-reinforced hatch opened wide, and black space yawned in front of the young inventor. He stepped up onto a small platform and latched himself to a safety ring, then stood upright, his upper body now entirely outside the hull of the Star Spear.

From this angle the other ship appeared to be floating over his head. Looking upwards, his back to the sun, he saw the silver-white spacesuit of Heliax Odysseus rise up from the airlock hatch of the CosmoSoar. From Tom's point of view, he was standing upside down.

"Can you hear me, Odysseus?" radioed Tom over his suit communicator.

"Just tell me what to do, Swift," came the brusque reply.

"Just relax," said Tom, "and move slowly. Try to center your weight between your two feet, then give a little jump. Push off very gently in my direction."

Odysseus spread his legs, and then hesitated. "You wish me to shut the door behind me?"

"It doesn't matter!" Tom replied. "Come on."

The billionaire pushed off from the inside of the Cosmo's airlock. At first he seemed to fly out smoothly, but as his feet passed the edge of the hatchway, the toe of his left boot bumped against the frame. He began to rotate in a slow, weightless cartwheel!

"No, no, no!" he screeched. "Help me!"

"Try to—"

"Don't tell me to relax! I'm out of control!"

Tom took a firm tone. "You'll be fine. Don't panic." But hearing what sounded like a whimper from Odysseus, he added: "Okay, look. Just keep talking. Calm down."

"All right... I—I—"

"Talk to me. Tell me about Rotzog. Have you been to his island base?"

There was a pause, and Tom could hear the sound of panting. "N—No. I only heard about it. He has named it after the project, *Carpe Diem i Priuiekta*—Latin and Brungarian: Project Seize-the-Day! I don't know the real name or where it is. We communicated through intermediaries after he left the yacht." Now Odysseus began to warm to the subject. "He played me for a fool, Swift! The man has no honor. He told me he understood, that he sympathized, but to him I was just money-money-money!"

"But the master plan—your idea?"

"Swift! Where are you?" Odysseus cried out in alarm.

"I'm right here!" Tom reassured him. The rotating figure was nearing the halfway point.

"So, the plan..."

"Plan? Yes. He promised me at first that he would send me into space in his own vehicle. He would show the world, he said. But the great genius blew it up during the first test!"

"In Canada?"

"Yes. So he came to me with this—this nitwittical idea of putting me on your island, to

ride the big rocket as a stowaway. It was his underling Goff who met with me, and another man, Heine. Heine—you know him."

"How?"

"I'm told you had him arrested. He pretended to be the other one, the employee we bribed—Brad Yardell."

"I see," said Tom, anxious to keep Odysseus focused on his resentments. "Then Heine is the real name of the man who called himself Arthur Gray. So where is Goff now? With Rotzog?"

"I don't know. Perhaps. By arrangement he and one of his men were stationed aboard the Heraklona after Rotzog left. I think now they were keeping an eye on me! I introduced Goff to the crew as my new captain."

Tom chuckled. The pieces were really starting to fit! "Then the man who called himself Captain Mitrou is really Goff! And the other must be the one I spoke to over the phone, who pretended to be you."

"Ah yes, the boy—Paolo. Very impulsive!"

"To say the least!" said Tom. He stretched out an arm and snagged the whirling Odysseus by the ankle. "And now, Mr. Odysseus, welcome aboard the Star Spear. And by the way, you're under arrest."

Odysseus gave Tom a sour look through his tinted visor. "But at least I am no longer spinning!"

Tom pulled Helix Odysseus down next to him and prepared to descend back into the ship. Suddenly the scene was illuminated by a blaze of light, the color of fire! Tom and Odysseus snapped around to look behind them.

The main engines of the CosmoSoar were firing!

Tom gaped at the sight and then turned accusingly toward Helix Odysseus. "Is this your doing?" he demanded.

"No, I swear!" cried the man in response. "You told me there was no more fuel!"

"It seems I was wrong." Tom shook his head ruefully. "I should have realized. Rotzog's computer program not only took control of the ship, but also caused it to transmit false telemetry! But there can't be much left, not after boosting you into lunar trajectory."

"He is a thorough scoundrel," said Odysseus. "Perhaps he plans to fly the rocket to this base of his, to steal your great inventions."

"I don't think so," replied Tom, guiding the other down into the airlock. "He's not retro-firing to slow the CosmoSoar—he's speeding it up."

In the cabin Tom made a series of radar observations of the other ship's new course, and combined them with calculations from the SpaceLane Brain.

"What's the verdict?" asked Bud, keeping a wary eye on Helix Odysseus, who glowered next to a bulkhead.

"No verdict yet," Tom replied. "Just more mystery. He's accelerating toward Earth, but also guiding the Cosmo into a shallower trajectory." He paused in mid-thought. "Yet...it might make sense, if..." He suddenly began to feverishly input figures into the craft's computer, finally bringing up a schematic world map on the screen. He looked up at

Bud, who could read his stricken expression.

"Tom! What is it?" Bud exclaimed.

"Something horrible!" rasped Tom, his mouth dry. "Bud, Rotzog plans to use the CosmoSoar to murder thousands of people!"

## CHAPTER 20

### A FIERY FINISH

BUD AND HELIAX Odysseus were stunned by Tom's declaration.

"You are saying this to make me nervous!" accused Odysseus.

"Shut it!" Bud snapped. "Tom, what do you mean?"

Tom settled back in his acceleration seat, eyes fixed on the computer screen. "It's an atmospheric 'skip' maneuver," he explained. "Instead of downing itself in the Caspian Sea, Dad's rocket is going to aerodynamically bounce off the outer atmosphere and return to space in a high loop."

"A loop? You mean it'll come down again?"

"Definitely," Tom replied. "And I've been able to calculate where—Volkonis, the capital of Brungaria!"

"I have been there," commented Odysseus. "A lovely old city, home of millions."

"There'll be a big hole in the middle of it if the CosmoSoar hits! The tanks still contain traces of fuel—hypergolic fuel!"

Bud's eyes grew wide. "Then it'll explode?"

Tom's eyes narrowed. "Explode? It'll make a fireball miles wide and set half the city on fire!"

"A fiend!" shouted Heliax Odysseus dramatically. "This is his revenge upon the nation that disowned him. But surely you can prevent this travesty!"

Tom rose and stood at the porthole, gazing into the distance. "Rotzog planned everything," he murmured bitterly, "even the slight possibility that another spacecraft



might be near enough to interfere. Look!—his program has caused the onboard gyros to give the Cosmo a spin, so that we can't approach it to give it a nudge."

Bud rubbed his forehead. "And you can't even contact anyone below."

Odysseus filled his lungs, ready to bellow. "Rotzog—you monster! He is—"

"Never mind what he is!" Tom demanded, taking his seat again and placing his hands on the controls. "I'll try to keep us close to the CosmoSoar. Perhaps we'll be able to do something after she rebounds." He reoriented the Star Spear and fired the engines.

"Tom," said Bud quietly. "Our own fuel is getting low." Bud's best friend looked up at him, and Bud added: "Just thought I'd tell you."

Bud knew Tom's thoughts. They would have to risk their own lives to save the lives of thousands.

The other ship was now only a small, dark speck dozens of miles ahead and below. It was already touching the outermost fringes of the atmosphere, and its Tomasite-coated hull was starting to glow, first a dull red, then a fearful blue-white as temperatures soared. A long fiery tail followed behind it like the multi-hued plume of a peacock.

"Starting back up," reported Tom, his eyes glued to the radarscope. The CosmoSoar rose back into space with surprising swiftness, its incendiary glow fading away again. Long minutes passed as the rocket trekked outward into near-earth space, its engines finally silent and the Star Spear in close pursuit.

"Right on track for Volkonis," Tom said presently. "And still spinning."

Heliax Odysseus threw back his shoulders and took a step forward. "Tom Swift, I offer my body as a projectile, in the interest of humanity! You may propel me in the direction of our quarry," he announced. "All I shall require is a small tranquilizer."

"We'll bear that in mind," responded Tom, not looking up.

"Still trying to impress your father, Heliax?" asked Bud sarcastically, with a meaningful glance at Tom that Tom did not see. "Are we still over Russia, Tom?"

"No. We're passing over the northern border of China. You'll soon see water on the horizon—the Sea of Okhotsk. Then we'll cross a little south of the Kamchatka Peninsula."

"Followed by the Bering Sea," Bud declared. "Which will put us within range of the Aleutian Islands!"

"Yes. I'm reorienting the radar sweep downwards," Tom said as he manipulated the controls. "We'd better keep an eye out for anything Rotzog might throw at us."

The minutes passed in tense silence as Tom Swift's rocket ship left the earth further and further behind, stretching tens of thousands of miles into space as it trailed the arcing CosmoSoar from forty miles behind.

Suddenly Bud exclaimed, "Tom! High altitude traffic down below!"

Tom glanced at the radarscope monitor. "Coming up at us from the northeast, and fast!"

"Do you think Rotzog's launched himself in a rocket of his own?" Bud asked excitedly.

"Too small," replied Tom. "A missile, I'm guessing. But it's not on an intercept course." The small missile was soon visible to the naked eye. It flashed across the forty-mile gap between the Star Spear and the CosmoSoar—and exploded silently in a corona of

brilliant light.

"He knows we are here!" cried Odysseus.

"Of course," said Tom calmly. "But he's not trying to hit us, just scare us away."

"He'll change his tune when he sees we're not leaving," Bud pointed out. Tom nodded without replying.

The course of the two ships carried them further and further north and east. Finally Bud announced, "There's the Bering Sea on the horizon—got to be."

"It is," Tom confirmed. "And—" He pointed at the radarscope screen. It was alive with moving blips!

"I—I think they're converging on us, Skipper," said Bud.

"But we're not picking up any radar pings from them, which means they're being guiding by pre-set programs until they leave the atmosphere." Tom now fired the Star Spear's rockets, sending a jolt through the cabin.

"Coming closer," Bud whispered, stark fear in his voice.

"I can see them!" cried Heliak Odysseus, standing at the porthole.

The aft engines still throbbing, Tom now fired the Spear's maneuver thrusters. The craft was coming up above the CosmoSoar, the spinning command module lying between Tom's ship and the earth far below. "Brace yourselves!" Tom called out.

The young astronaut's strategy now became apparent. The foremost of the missiles, now using its onboard radar system, was homing in on the wrong target! It struck the CosmoSoar a glancing blow, which sent the command module tumbling wildly; and then the missile burst in a flare of deadly power!

Although there was no air to carry sound or concussion, tiny fragments of the missile were sprayed into space at high speed in all directions. Within seconds they were clanging against the Star Spear like a storm of meteors. The ship vibrated and swerved under the rain of impacts.

Now the other missiles arrived. But the tumbling CosmoSoar and the cloud of hot particles in their electronic sights seemed to confuse them. One by one they converged like vultures upon the stricken craft, and one by one they exploded.

Suddenly the cabin was flooded with light. A missile had scored a direct hit!

The CosmoSoar had disintegrated in a starburst of white-hot flame, fed by its remaining fuel!

Tom and Bud hooted and cheered. The threat to Volkonis was over!

"That was the last of them," Tom confirmed a moment later. "And I was able to backtrack their trajectories, too." He pointed out the downward-facing porthole. "That little brown spot over there—that's Rotzog's island."

Even as they watched, there was a sudden bright flicker on the distant island, like a spark.

"Has he fired another missile at us?" Odysseus burst out.

"Not according to the radarscope," Tom responded, mystified. Then he looked up. "I think his base is on fire! One of his missiles must have blown up on the launch pad!"

"The fool!" snorted Odysseus. "Very typical of his incompetence!"

The three watched in awe as the Star Spear's orbit carried them closer to Rotzog's island. Tom pulled out a powerful handheld telescope, which the three passed between them. It revealed a tiny islet utterly encompassed in black smoke and raging flame.

"The whole place is going up!" Bud gasped.

"The explosion must have hit some of Rotzog's chemical storage tanks," Tom observed. Abruptly the cabin loudspeaker crackled to life. "Fearing Island control to Swift Star Spear!" It was the voice of Hank Sterling!

Tom snatched up the microphone happily. "Hank! We read you!"

"Thank God!" came the voice, followed by the muffled sound of Hank calling someone else over to the communications console.

"Tom? Are you there?" It was Damon Swift.

"Here, Dad," Tom responded, "with Bud and Helix Odysseus. We're safe and well—but we've been dealing with—"

"I know, son. You've been under observation from the military's Deep Space Command satellite network, and they've been relaying the data to us. Our hearts almost stopped when we learned of the missile barrage approaching you!"

"We can see Rotzog's island launch facility—it's on fire! We think one of his missiles exploded on liftoff."

"You're right about the fire, but not about the cause. According to satellite data, the facility was struck by an incoming missile launched from a vessel nearby. Specifically the yacht Heraklona!"

Helix Odysseus withdrew a handkerchief and daubed his eyes. "Thank you, Father, thank you!" he murmured reverently. Then he added, "You see, young Swift? A father looks after his own!"

After he had absorbed this news, Tom said, "Dad, we've used a lot of fuel. The descent to Fearing may be more risky than anticipated." But it developed that the mission control team had anticipated the problem. Mr. Swift had worked out a corner-cutting return trajectory allowing the rocket ship to land, with greater safety, at San Francisco International Airport.

"My home town!" Bud exclaimed.

Receiving the updated flight directives electronically, the Star Spear gyroed a half-roll, until its engines were facing the direction of travel. A series of short bursts cut the craft's speed, causing it to begin a downward slide into the atmosphere. The ship then reversed orientation once more, entering the air nose-first and flying the long route down with the control and maneuverability of a hypersonic jetcraft. In fifty-four minutes San Francisco Bay was sparkling in the sun 30,000 feet beneath them; and soon enough they were hovering above the airport tarmac on a column of fire.

As Tom throttled back and the rocket began to ease downward, he heard Bud sigh.

"What's up, pal?" he asked.

"Nothing important, I guess," Bud responded. "It's just that after all that effort and danger, there's one thing we couldn't do—win the space competition."

"What do you—"

"I mean, we never did make it back to Fearing, so in all those hours we never actually completed a full orbit of the earth. Now I suppose the prize will go to that European team."

"But Bud," said Tom with a grin, "you've forgotten something. The whole Earth has kept on turning, even without us. As measured by the fixed stars, San Francisco is now even further east than Fearing Island was when we took off. We did circle the globe!"

"Then you've won, genius boy," Bud cheered. "I should have known!"

The ship settled down easily on its support fins, and stood silently in the San Francisco sunshine. But for several minutes there was no sign of life aboard. Then the outer hatch slowly opened wide, and two figures stood in the hatchway, waving at the cautiously approaching crowd. The television news cameras beamed around the globe the arresting image of Tom Swift and Bud Barclay, space pioneers, clad in a matched pair of gaudy Texas-style shirts!

"We'll have to tell Chow that his 'rescue beacons' really did the trick," Tom whispered to Bud.

Two hectic weeks later, Tom sat in his quarters back on Fearing Island, updating his electronic journal—which Phil Radnor now assured him was, at last, absolutely immune to unauthorized penetration.

"...and so with the capture of Goff and our turncoat employee Brad Yardell, who confessed to the acid boobytrap aboard the Flying Lab, the last of Rotzog's major players are in custody. We can now turn to evaluating the scientific and engineering data from the flight, and I'm free to get back to Shopton and start working on my Giant Robot idea.

"Dad, it looks to me that the rocket competition between the two of us came out a draw. Both ships performed magnificently. I only want to say now what I never seem to say enough—how proud I am to be a Swift, and especially to be your son."

Tom lifted his hands from the keyboard and leaned back, thinking. What more needed to be said?

"I suppose two mysteries are left hanging. We still don't know who supplied Demetriou Odysseus with the exact location of Rotzog's island. Whoever did it probably saved our lives; I'm sure Rotzog was planning to launch another missile barrage. With the CosmoSoar destroyed, there would have been nothing to shield us.

"But the strangest mystery has just come to my attention. Our contact Asa Pike has disappeared completely! It turns out none of Rotzog's cronies knows anything about him, and neither do the local townspeople. He wasn't hired by the phony 'Arthur Gray' as a caretaker after all. He's just one more of Sandy's 'unsuspected suspects.'

"I have a hunch the two mysteries are connected. It just may be that Asa Pike—whoever he was—tipped off Mr. Odysseus in just enough time to get the Heraklona into position. Anyway, I like to think so."

Tom Swift paused again. Then, on a whim, he clicked the "all caps" key on the keyboard and typed two more words.

THANK YOU

He was not in the least surprised when a message appeared almost instantly beneath those words.

YOUR TAX DOLLARS AT WORK